ENGINEERING NEWS-RECORD

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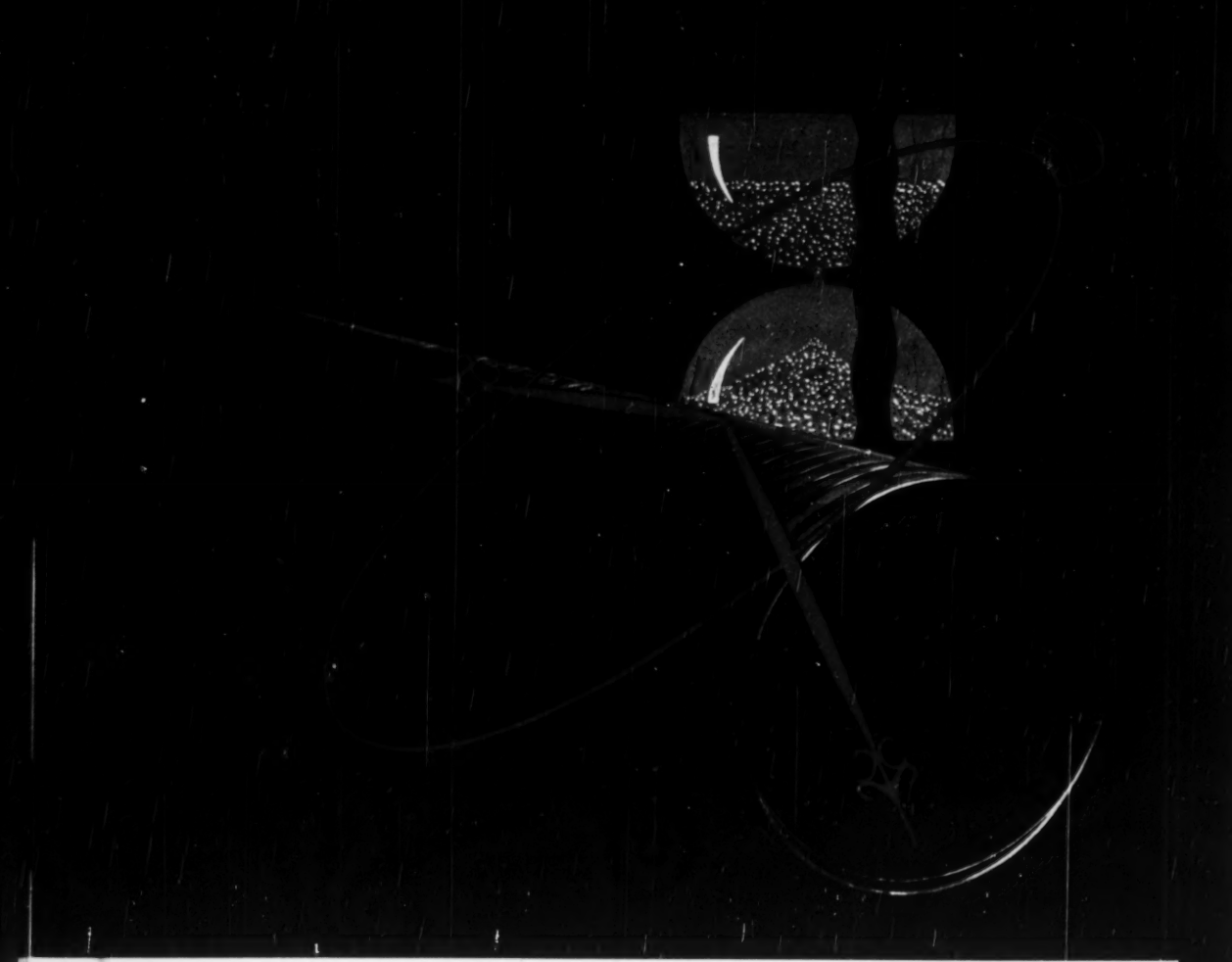

The bottom is "Tops" in this drainage structure

It used to be that drainage structures often had to be replaced even though the upper three-fourths was still in good condition. Engineers and officials wanted to do something about this waste. But what?

Then Armco engineers found the answer in "balanced design." They developed Armco PAVED-INVERT Pipe. This new pipe had a thick bituminous pavement in the invert for greater protection against erosion. Now the bottom lasts as long as the top—service life is up, maintenance down—and everybody's happy.

Creating better products to meet specific needs has been the objective at Armco for more than 40 years. A few examples are HEL-COR Perforated Pipe, STEELOX Buildings, FLEX-BEAM Guardrail, PIPE-ARCH, and sturdy, durable MULTI-PLATE Bridges.

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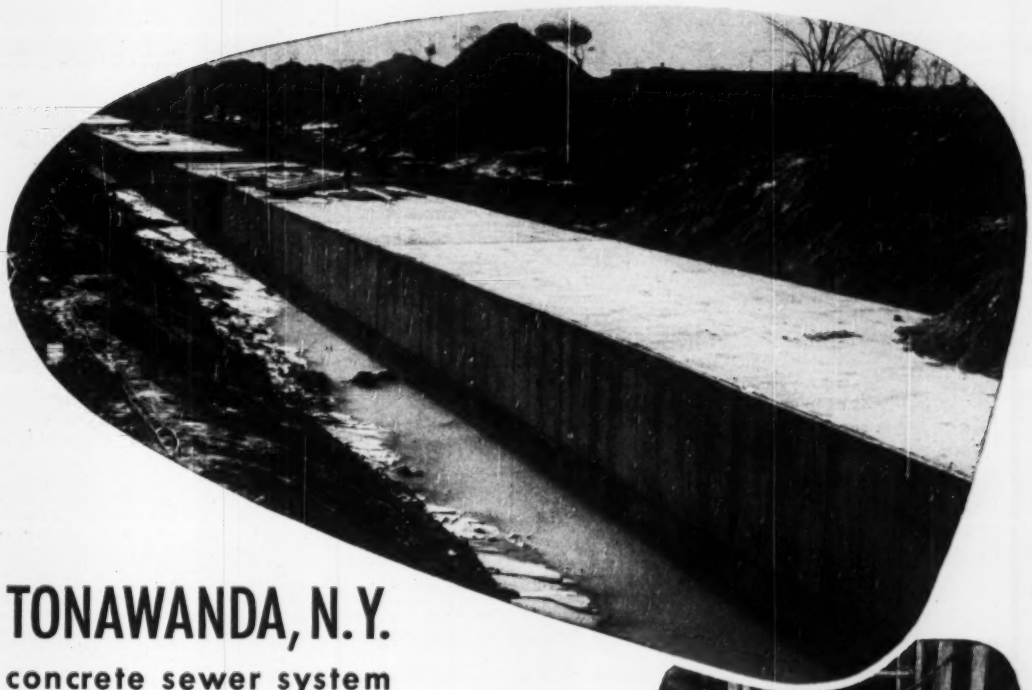


TONAWANDA, N.Y.

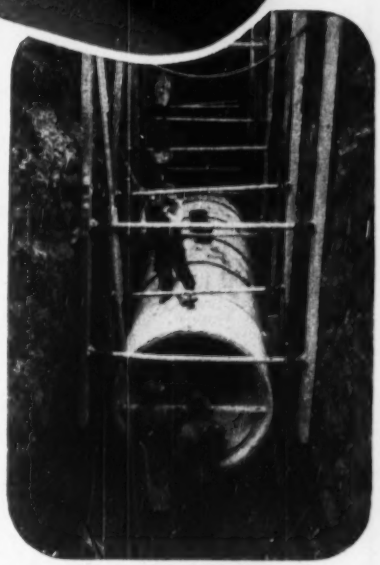
concrete sewer system features many types of construction

LEGEND says Tonawanda, N.Y. means "swift water." The growth of this industrial city has been so rapid, however, that east side residents frequently found their sewers did not flow swiftly enough. Because of inadequate storm sewers, storm waters emptied into sanitary sewers, which backed up with every heavy rain, flooding basements and endangering health.

To solve this problem a new concrete storm sewer system, unusual in many respects, was built. It includes more than 3½ miles of reinforced concrete box sewer 16 ft. x 7 ft., 10 ft. x 7 ft., 7 ft. x 6 ft. and a dual 9-ft. x 7-ft. section. The system also required more than two miles of reinforced concrete sewer pipe ranging in size from 18 in. to 78 in.

The Tonawanda Town Board officials believe that the funds expended for this project will be repaid in taxes many times because of increased valuation from developments in the area. Already industrial, apartment and retail store building have boomed and more than 1,500 homes have been completed.

Concrete sewer structures such as these render lifetime service. First cost is moderate and maintenance requirements are quite low. The result is ***low-annual-cost*** sewer service.



Upper photo shows completed reinforced concrete box sewer, 7 ft. high x 16 ft. wide, before backfilling, on section A of project. McLain Construction Co., contractor. Lower photo shows installation of 66-in. reinforced concrete sewer pipe in a 24-ft. cut on section D of project. Herbert F. Darling, contractor. Nussbaumer & Clarke, consulting engineers on entire project.

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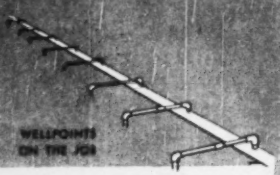

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 145 NOVEMBER 9, 1950 No. 19

WALDO G. BOWMAN
Editor

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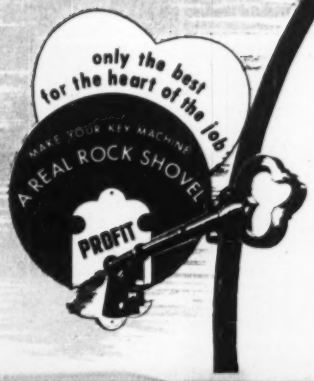

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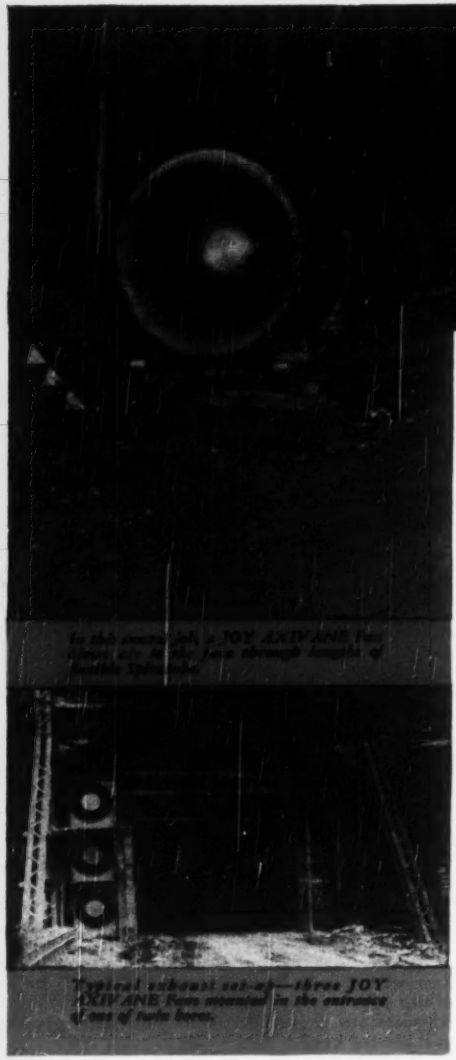

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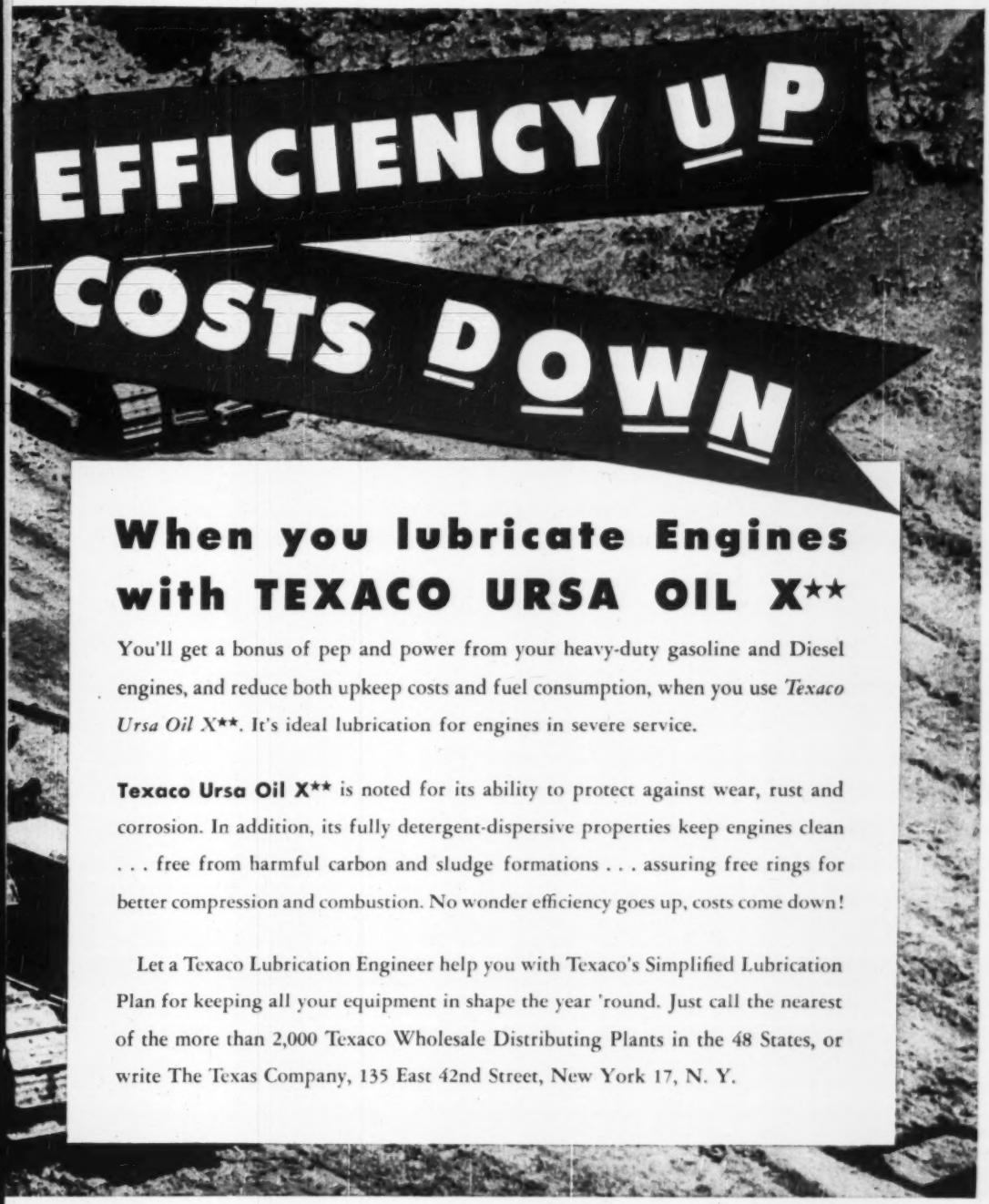

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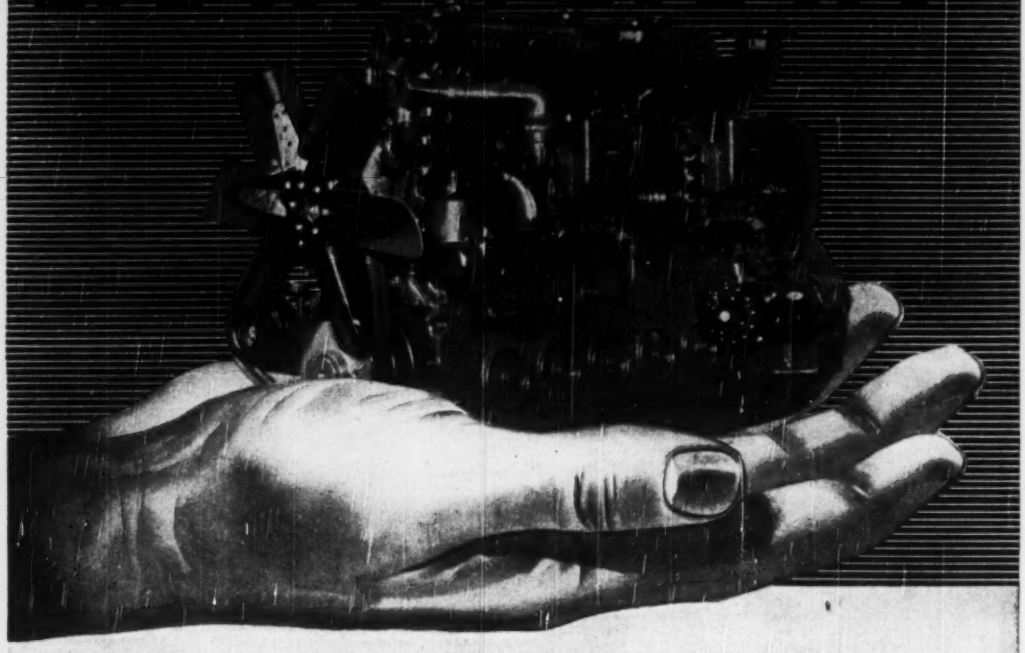

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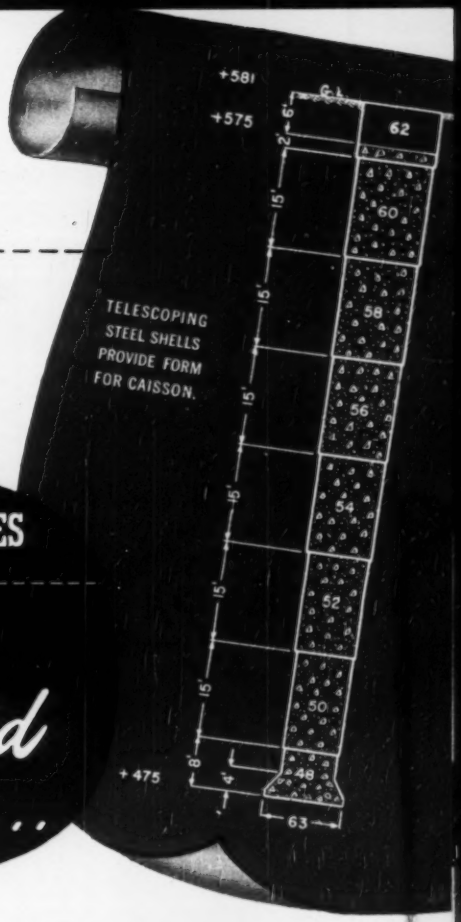
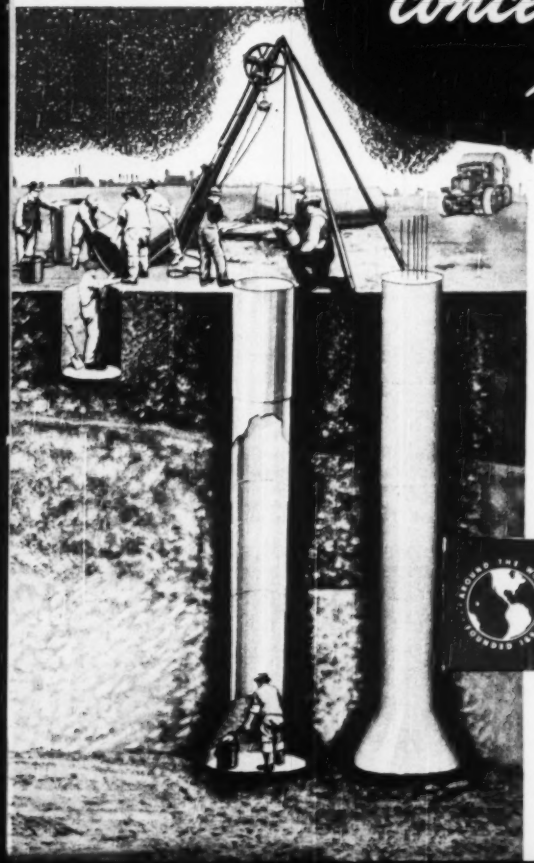
At left, excavating starting pit and placing first cylinder. At center, excavating bell at bottom of the steel-lined shaft. At right, the completed caisson.



5. GOW CAISSON PILES

For heavy concentrated loads . . .



Raymond Gow caissons are efficient and economical for supporting heavy concentrated loads under certain soil conditions. The Gow method consists of hand or machine excavation carried on inside of telescoping steel cylinders. Where the caisson rests on hard ground, a bell is usually formed at the bottom to distribute the load over a large area. Where the caisson rests on rock, the bell is usually omitted. After excavation is completed, the steel cylinders are removed as the concrete is poured.

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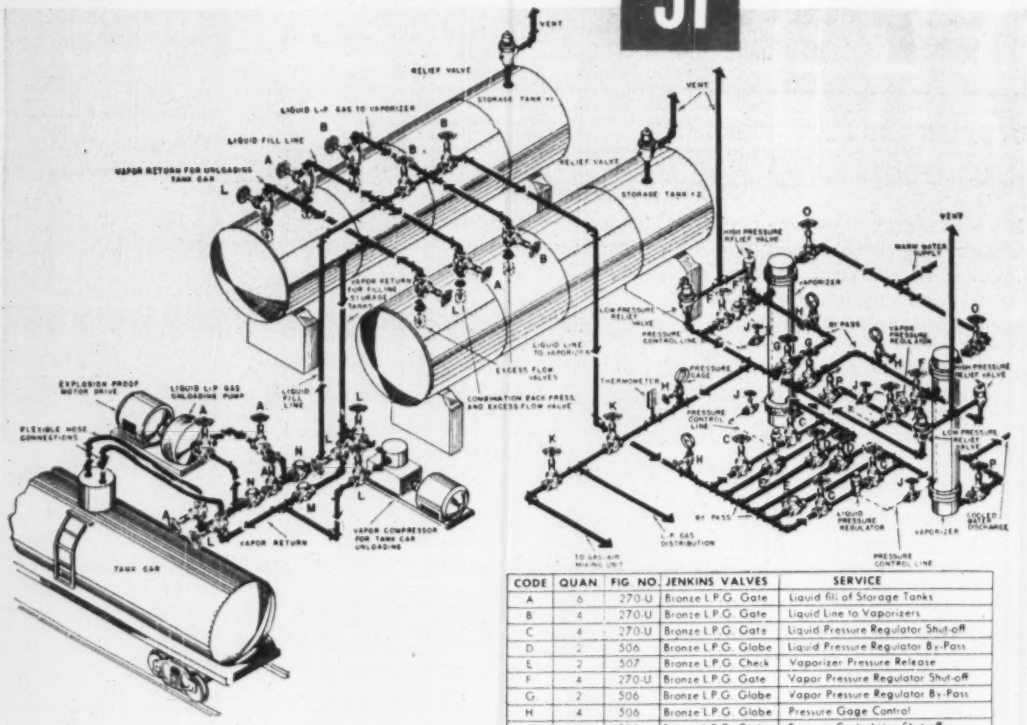

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A	6	270-U	Bronze L.P.G. Gate	Liquid fill of Storage Tanks
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C	4	270-U	Bronze L.P.G. Gate	Liquid Pressure Regulator Shut-off
D	2	506	Bronze L.P.G. Globe	Liquid Pressure Regulator By-Pass
E	2	507	Bronze L.P.G. Check	Vaporizer Pressure Release
F	4	270-U	Bronze L.P.G. Gate	Vapor Pressure Regulator Shut-off
G	2	506	Bronze L.P.G. Globe	Vapor Pressure Regulator By-Pass
H	4	506	Bronze L.P.G. Globe	Pressure Gage Control
J	4	506	Bronze L.P.G. Globe	Pressure Control Line Shut-off
K	2	270-U	Bronze L.P.G. Gate	Distribution System Shut-off
L	6	270-U	Bronze L.P.G. Gate	Vapor Return for Tank Car
M	1	507	Bronze L.P.G. Check	Prevent Vapor Backflow
N	2	507	Bronze L.P.G. Check	Prevent Liquid Backflow
O	2	47	Bronze Gate	Warm Water Supply
P	2	106 A	Bronze Globe	Cool Water Discharge

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NEWS BRIEFS

School fire exits—After a long controversial delay, during which Massachusetts public safety officials threatened to close some Boston schools, contracts have been awarded by Mayor John B. Hynes for alterations to provide exits in public schools in accordance with the state law passed after the Cocoanut Grove fire disaster. The contracts were $129,601 to Construction Units, Inc., and $74,200 to M. Spinelli & Sons. Work will start at once.

Votes for women—Too late, the male officials of the little town of Madison, Miss., have learned the folly of ignoring housewives' demands for cleaner water for clothes washing. Now they are out of office and the women are in. As the result of a landslide election, the posts of mayor, city clerk, and five aldermen have been taken over by women. "Now", said one of them, "we'll find out what's the matter with the water and fix it."

Construction safety—Safety instructions for apprentices in building trades are contained in a new pamphlet, "Apprentice Joe Learns Construction Safety." It may be obtained from the Bureau of Labor Standards, Department of Labor, Washington 25, D. C.

Sewage planning loan—An advance loan of $67,600 to Muncie, Ind., has been approved by the Community Facilities Service of the Housing and Home Finance Agency, Washington, for planning a sewage project to cost $2,241,205.

Taxpayers' benefit—The recent annual report of the Miami Conservancy District at Dayton, Ohio, reveals that taxpayers of the area have paid $30,860,495 for flood prevention—more than $4,000,000 less than had been estimated when the plan started in 1920.

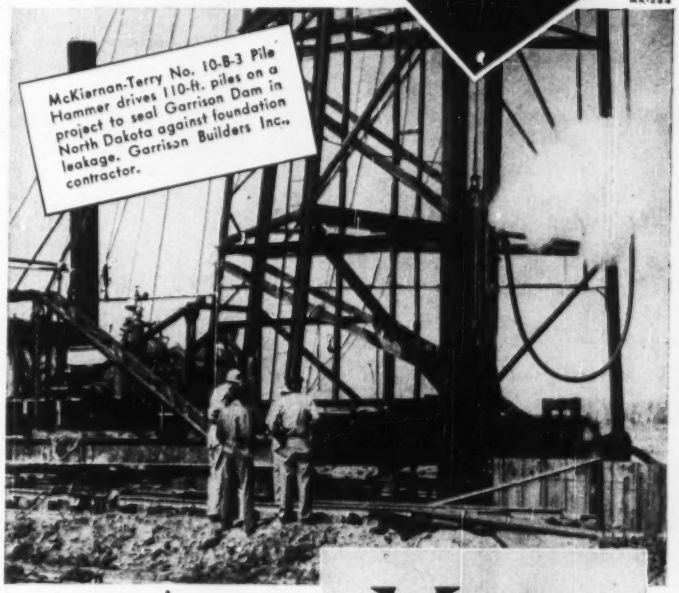
Abou ben Adhem—Minnesota's name leads all the rest of the Middle western states in the matter of slum clearance, according to Stuart Rothman, housing director of that state. He reported that 4,138 new housing units are set for construction for that purpose in nine Minnesota cities—St. Paul, Minneapolis, Duluth, Hibbing, Chisholm, Winona, Fergus Falls, South St. Paul, and Virginia.

Six new bridges—In North Carolina a special highway fund allocation of $3,475,000 has been approved for six of the state's most critically needed

More than 50 miles of sheet piling—300,000 linear feet—were driven by a McKiernan-Terry No. 10-B-3 Double-Acting Pile Hammer to make a 6,655-ft. wall. Even though tough subsurface conditions made it necessary to jet before and during driving, as many as 5,400 ft. of piles were put down per 20-hour day • An interesting feature of this Garrison Dam cutoff wall job was the use of an inverted McKiernan-Terry No. 7 Pile Hammer as an extractor to pull up piles for inspection • No matter what the need, contractors find the dependable single-acting and double-acting hammers and double-acting extractors they require in the complete McKiernan-Terry line. 17 sizes in 2 types are available. Bulletin gives full details.

DRIVING 5400 FT. OF PILES per 20 hours

MK-284



McKiernan-Terry No. 10-B-3 Pile Hammer drives 110-ft. piles on a project to seal Garrison Dam in North Dakota against foundation leakage. Garrison Builders Inc., contractor.

COAL TOWERS

TRANSFER BRIDGES

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EASIER

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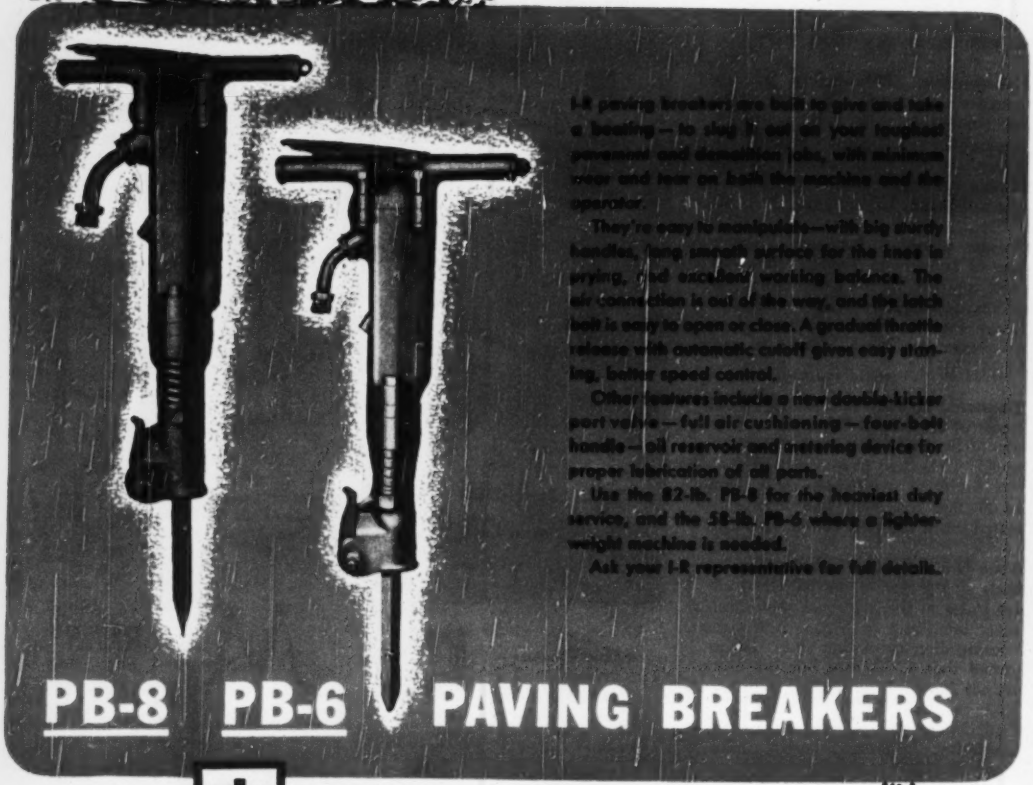
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bridge projects, as follows: Across Cape Fear River between Elizabethtown and Wilmington; across Bogue Sound between Morehead City and Atlantic Beach; across the Yadkin River at Rowan-Davidson county line; across the Yadkin between Winston-Salem and Yadkinville; and across the French Broad River near Hot Springs.

No prison labor—Assistant Attorney General S. N. Williams, Jr. of Kentucky declares that any contract by which a city leases its prisoners to a private enterprise is void, since such hiring of prison labor is illegal in that state.

Studying by-passes — Indiana State Highway Commission and Purdue University are making a joint traffic survey to determine whether by-passes skirting cities are used by the public enough to justify their cost. The survey is being made at Kokomo and Lebanon, where two new by-passes will cost more than $2,250,000.

THE COVER

The University of Washington wanted to keep its football customers comfortable—but it wanted the customers. So speed was the criterion when the school decided to build this 15,000-seat, $1,500,000 addition to its stadium at Seattle. (See also ENR Feb. 16, p. 27; April 27, p. 28.)

The university's answer to speed was to call for welded steel construction—engineers figuring that in the time available (April to September) welding would save several weeks.

The structure adds 15,000 seats in 59 rows and covers 30 more rows with 5,000 more seats, includes new washroom facilities, a double-deck press box 200 ft. long. The roof is a 400 x 150-ft cantilever which is supported additionally by 10 steel struts 10 rows forward of the rear wall. The two spiral ramps are of reinforced concrete, have a 10 percent rise, and can be used by trucks supplying concessionaires. An elevator with a rise equivalent to 15 stories is also available, largely for employee use.

Strand and Sons held the general contract, with Consolidated-Western Steel Corp. doing steel erection and shop-welding about 25 percent of the steel, Pacific Car and Foundry did assembly welding at its Seattle plant, trucking assembled sections to the site. Critical joints were inspected by magnaflux, one out of five by gamma ray. Robert W. Hunt Co. of Chicago was inspection and consulting engineer on welding; George W. Stoddard and Associates were architects and Sigmund Ivarsson was consulting engineer.

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AND grooving those pipe ends is a cinch the Victaulic Way . . . "Vic-Groover" grooves 'em automatically in *half the time* of a conventional pipe threader.

Join Up with "Vic" and make your next piping job ALL VICTAULIC. You just can't beat the COMPLETE Victaulic Line for efficient, dependable, on-the-job piping. Yes Sir, you can count on "good connections" when you count on VICTAULIC. Write today for these two:

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The International TD-24 "Champion of Crawlers"

More than 100 International TD-24 diesel crawler tractors have already been delivered to customers by a single International Industrial Power Distributor. Similar strong demand for this new "Champion of Crawlers" all over the country—proves that the TD-24 is customer's choice—every time!

You earthmoving men who have chosen the TD-24 to increase your payload production have given the TD-24 its present place of prominence in the industry. You've proved, on your jobs, that there is nothing like the TD-24 for power and performance. You've found that this "Champion" pays for itself quickly, and then gives you *extra earnings* for the rest of its rugged working life.

We are proud of this tractor—the TD-24—and of the acceptance you have given it. And we're proud of the superb distributor organization which has brought this mighty crawler to you—coast to coast.

As more International distributors deliver their 100th TD-24 in the months ahead, hundreds more of you who need them will gain the benefits which the great work-capacity and payload production of this "Champion of Crawlers" provides.

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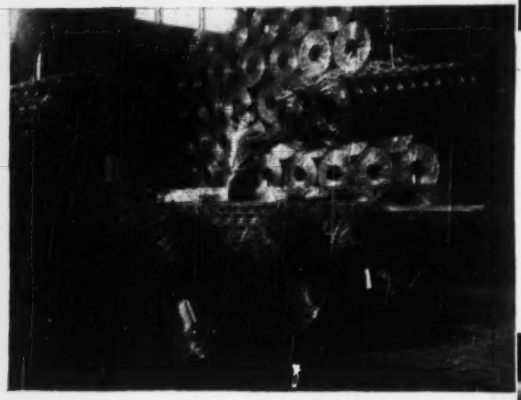
This strong, diamond-pattern reinforcing is available in large or small quantities at your nearby Ryerson plant. It's ideal reinforcing for repair of walls, dams, paving, and for all types of gunite work. It's easy to handle because sharp edges have been completely removed. Wherever flat, rigid reinforcing of good bonding strength is needed, use Ryex. Shipment is immediate.



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You can fill many of your requirements for welded wire fabric from nearby Ryerson stocks. Perhaps not all requirements, but the fabric you need may be on hand for quick shipment, despite heavy demand. Regular stocks include both plain and galvanized in all commonly used wire spacings and gauges. Our engineers will gladly recommend gauge and spacing that will give necessary strength at the lowest possible cost.

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All Ryerson reinforcing bars are made to meet the new ASTM Spec. A 305-49. Great demand has depleted our stocks. However, we will always do our best to serve you. When we have the sizes you need, you'll find Ryerson reinforcing service fast, dependable and complete—geared to start jobs fast and keep them on schedule.

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THE CONSTRUCTION WEEK

DEFENSE—In the welter of criticism of stiff government curbs on housing credit, there was a strong voice for the defense. The United States Savings and Loan League (which represents 85% of the $15 billion mortgage business) said it saw nothing so far to indicate that restrictions are either unreasonable or extreme. Home builders and materials producers (who are predicting only 400,000 to 600,000 housing starts next year unless restrictions are relaxed) found nothing to cheer about in the League's statement—except for the comment that credit controls are far more desirable than putting the housing industry under a crazy-quilt of priorities, permits and rationing.

TOLEDO TURNPIKE TERMINUS?—Ohio's proposed toll turnpike—originally planned as a link between the Pennsylvania Turnpike and the Indiana state line—may end up at Toledo, after all. Speaking before Cleveland civil engineers, T. J. Kauer, director of highways, said the section of the planned road from Toledo westward looks "weakest" from a revenue standpoint; added that Indiana officials have shown no particular interest in carrying the turnpike on across that state.

HELP FOR UTILITIES—The Defense Power Administration, recently set up within the Interior department, has started to function as a claimant agency to obtain materials for the electric utility industry. DPA officials have reported some success in dealing with the National Production Agency to obtain steel, copper and other materials; top expediting job so far has been getting deliveries of reinforcing and structural steel for the Tennessee Valley Authority for its big new steam plant construction job at Johnsonville, Tenn.

UTILIZATION NOTE—Timber Structures, Inc., is planning an aggressive promotion campaign for use of timber for secondary-road bridges. Pitch will be that the timber will outlive the location of the road—will therefore be most economical material to use.

SLOW ON WAGES—So long as the current spree of wage increases goes on, Washington thinks labor leaders will continue to shove any stabilization ideas into the drawer for later reference. Out of the corner of their eyes, labor leaders are watching the steady climb of the consumers' prices index: They have a suspicion the index is going to catch up with them some day, but so far this year wage raises have more than compensated for the index rise. And the labor men would rather not quit while they're ahead.

MANPOWER TIGHTER—Latest checks with the military give this slant to the manpower picture: Additions to the armed services are expected to run about 1,100,000 men in the 12 months ending June 30, 1951—lifting the total military to 2,600,000. Coupled with estimated needs for defense and essential civilian work of about 3,000,000 men, this adds up to 4,100,000 more workers to be found. Labor experts think 3,200,000 can be found among housewives, oldsters and unemployed—the 900,000 deficit will have to be made up by cutting civilian output in order to free workers. It all adds up, says Washington, to a tight labor market, with skilled workmen of most kinds hard to get.

CANADA INTO POINT 4 ACT?—Canadian engineers may soon be going out to Asia to give technical assistance toward development of natural resources, said government spokesmen. Returning from a London conference with other commonwealth representatives, Fisheries Minister Mayhew said studies were being made toward bettering the lot of the populations of Pakistan, India, Ceylon, Indo-China, Burma, Indonesia and Maylaya.

NEW REACTOR—After a year and a half of dickering, the Atomic Energy Commission this week gave North Carolina State College the go-ahead for construction of a nuclear reactor—with its own funds. It will be the first privately-operated pile in the United States.

SPANKING—Oscar Ewing, Federal Security Administrator, was speaking with White House sanction when he criticized the National Security Resources Board for withholding information that is essential to civil defense planning. Government agencies are irked by NSRB's extreme caution in stamping "secret" on agency-furnished data, thus denying further public use of the material. Talking to public health officers of the states and territories, Ewing attacked "the aura of secrecy and suspicion" surrounding NSRB's civil defense program. He was wielding a stick that President Truman could not well use on a board that he himself had created.

SLUM CLEARANCE OK—There's nothing unconstitutional about a slum-clearance law passed last year by the Alabama State Legislature, said the state Supreme Court. Answering a request for an advisory opinion, the court said the law giving approval to local governments to share slum clearing costs with the federal government was properly drawn. The statute provides that local governmental units may assume one third of the costs of slum clearance, while the rest will be made up by the federal government under terms that have been provided by the recent housing act.

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AN OIL REFINERY IN TEXAS needs cooling water chlorination.

A PAPER MILL IN WISCONSIN requires white water slime control.

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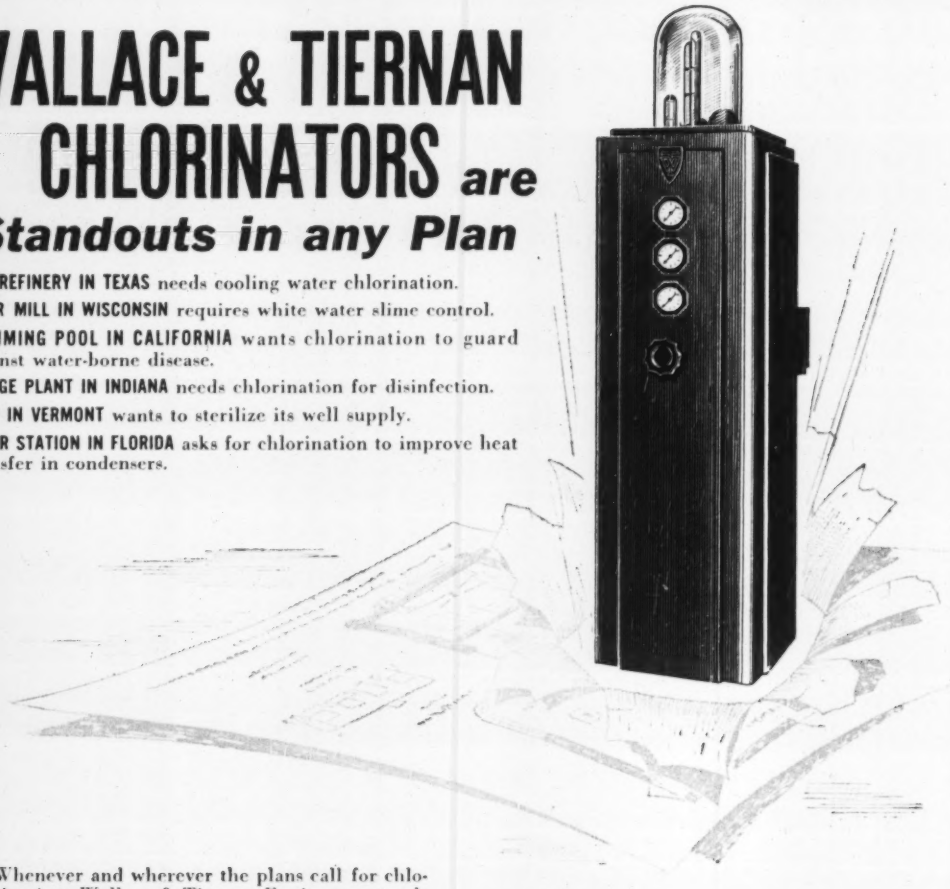
A CAMP IN VERMONT wants to sterilize its well supply.

A POWER STATION IN FLORIDA asks for chlorination to improve heat transfer in condensers.



Whenever and wherever the plans call for chlorination, Wallace & Tiernan Equipment stands out as the first choice of engineers and architects all over the country.

The reasons for this preference aren't hard to find because smart buyers know that with Wallace & Tiernan Equipment they get:

WIDE SELECTION—Wallace & Tiernan Chlorinators and Hypochlorinators come in a variety of models and sizes handling from ounces up to 3 tons of chlorine daily.

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EXPERT DESIGN—All Wallace & Tiernan equipment is the product of expert development by a top notch research group specializing in chlorine and chemical control equipment. This is the same group that has pioneered such famous developments as the Visible Vacuum Principle, Break-Point Chlorination, and Residual Recording during the last 35 years.

SERVICE—Wallace & Tiernan's nationwide service organization is ready to solve bacteria-induced water treatment problems, whatever they may be.

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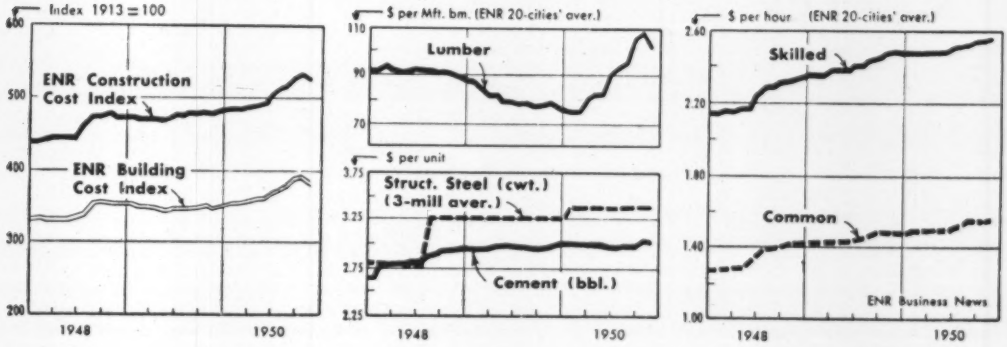
NOVEMBER CONSTRUCTION BUSINESS REPORT

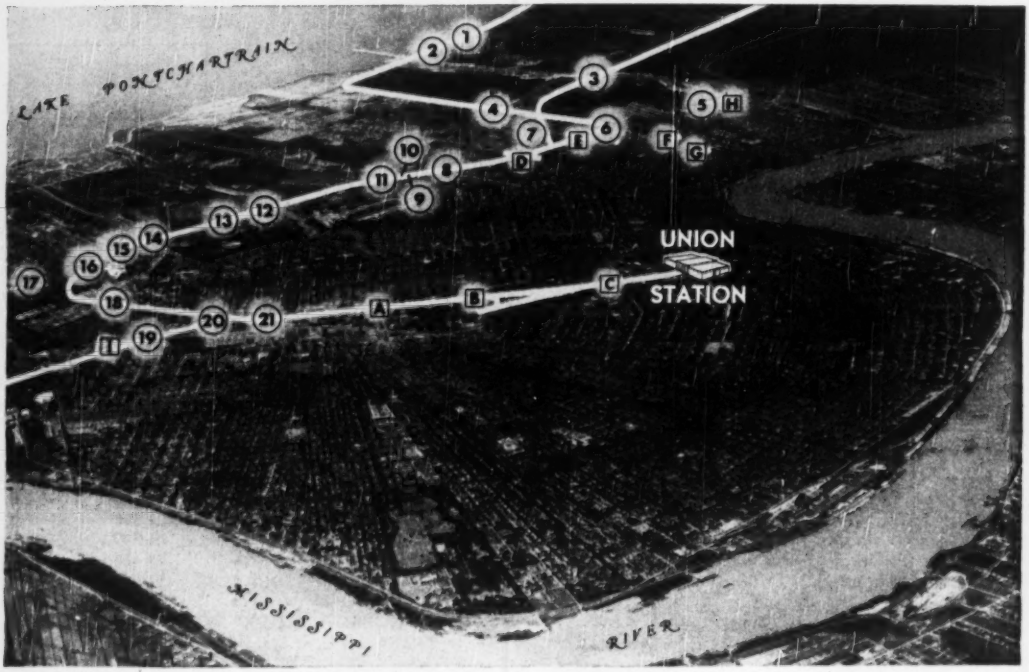


ENR INDEXES (1913 = 100)	Nov. '50	Oct. '50	% Change	Nov. '49	% Change
Construction Cost	527.85	534.44	−1.2	480.02	+9.9
Building Cost	388.85	396.23	−1.8	352.91	+10.2
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	3.059	3.039	+0.6	2.950	+3.6
Structural Steel, (3-mill aver.), per cwt	3.400	3.400	0.0	3.250	+4.6
Sand, per ton	2.009	2.009	0.0	1.952	+2.9
Lumber, 2x4 Fir, per M. ft. bm	108.897	115.373	−5.6	84.897	+28.2
Lumber, 2x4 Pine, M. ft. bm	94.666	102.500	−7.6	75.050	+26.1
Common brick, per M	29.575	29.163	+1.4	27.763	+6.5
Ready-mixed concrete, per c. y	10.600	10.482	+1.0	10.337	+2.5
Structural Clay Tile, 3x12x12 per M	135.248	135.248	0.0	131.755	+2.6
WAGE RATES (20-cities' average)					
Common	1.574	1.568	+0.3	1.478	+6.5
Skilled (aver. 3 trades)	2.571	2.565	+0.2	2.464	+4.3
Bricklayers	2.838	2.832	+0.2	2.721	+4.3
Structural Ironworkers	2.524	2.518	+0.2	2.432	+3.8
Carpenters	2.352	2.345	+0.2	2.242	+4.9

	1950	1949	% Change	Ten Months 1950	Ten Months 1949	% Change
CONTRACTS AWARDED (thous.)						
Total U. S. (ENR reported)	$950,526	$553,482	+71.7	$9,914,942	$6,704,618	+47.8
Private	576,492	280,662	+105.4	5,802,890	3,169,578	+83.0
Public	374,034	272,820	+37.0	4,112,052	3,535,040	+16.3
Federal	79,092	47,378	+66.9	1,012,295	887,896	+14.0
ENR Constr. Volume Index, '13 = 100	383	248	+54.4	393	282	+39.3
NEW CONSTRUCTION CAPITAL						
Total	514,643	1,636,885	−68.5	7,537,558	6,617,873	+13.9
State & Municipal Bond Sales	177,437	348,476	−49.0	2,359,925	2,509,940	−83.0
Corporate Security Sales	337,206	161,962	+108.2	1,826,539	1,974,709	−16.3
Federal (non-federal work)	.....	.....	.....	522,000	385,000	+14.0
Federal (federal work)	.....	1,126,447	.....	2,829,094	1,748,224	+39.3

MATERIAL SHIPMENTS & LABOR SUPPLY	September (S) August (A) 1950	1949	% Change	Nine Months (9) Eight Months (8) 1950	1949	% Change
Cement, thous. bbls., Bu. of Mines	25,144(A)	23,633(A)	+6.3	148,443(8)	133,254(8)	+11.3
Fabr. Struc. Steel, thous. tons, AISC	156(S)	162(S)	−3.7	1,396(9)	1,501(9)	−6.9
Lumber, mil. ft. bm., NLMA	3,758(A)	2,901(A)	+29.5	26,366(8)	19,934(8)	+32.2
Lumber Prod., mil. ft. bm., NLMA	3,950(A)	2,938(A)	+34.4	25,612(8)	20,420(8)	+25.4
Contract Constr. Employ., thous. BLS	2,572(S)	2,341(S)	+9.8	(Av.) 2,265(9)	(Av.) 2,136(9)	+6.0

THIS NEW
Old New Orleans



Air view of New Orleans, showing location of Union Terminal and 30 grade separations—see key below, right.

$50-Million Terminal and Grade Separation Program Makes Construction History

● Progress is on the march in delightful old New Orleans, where a construction program tremendous in scale and concept is making civic and industrial history:

(1) A great new Union Terminal will shortly replace five scattered, outmoded structures, now serving seven trunk lines.

(2) Thirty modern grade separation structures will eliminate 116 out of 144 traffic-laden grade crossings—22 separation structures scheduled for completion simultaneously with the Terminal, in 1952, then three more within 18 months, and five thereafter.

Soundness of execution matches the imagination and ingenuity of the program. Every project in this vast undertaking embodies the utmost in engineering know-how and in staunch construction of enduring integrity, as exemplified by the use of many thousands of barrels of Lone Star Cement in concrete structures... assuring the durability, fire-safety and low maintenance which add up to lowest annual cost and highest taxpayer appreciation.

KEY TO GRADE SEPARATIONS

UNDERPASSES: (1) Hayne, (2) Downman Road, (3) Burma Road, (4) Gentilly, (5) Poland Ave., (6) Florida Ave., (7) Franklin Ave., (8) N. Broad, (9) Gentilly, (10) Paris Ave., (11) St. Bernard Ave., (12) Wisner, (13) Hospital, (14) Marconi Drive, (15) Florida Ave., (16) Canal Blvd., (17) Pontchartrain Blvd., (18) City Park Ave., (19) Leonidas, (20) Pontchartrain Blvd., (21) S. Carrollton.

OVERPASSES: (A) Jefferson Davis Pkwy., (B) S. Broad, (C) S. Claiborne Ave., (D) Elysian Fields, (E) Franklin Ave., (F) Galvez, (G) N. Claiborne, (H) Poland Ave., (I) Palmetto.

General Supervision:
NEW ORLEANS RAILROAD TERMINAL BOARD and
NEW ORLEANS UNION PASSENGER TERMINAL COMMITTEE
Supervising for Terminal Board:
CHARLES E. CASSAGNE, Jr., Administrative Engineer
For Terminal Committee: **C. J. WALLACE,** Chief Engineer
Associate Architects:
WOGAN & BERNARD, JULES K. DeLEVERGNE, and **AUGUST PEREZ**

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,500,000 BARRELS ANNUAL CAPACITY

Clear Ground Rules Needed

THE NATIONAL PRODUCTION AUTHORITY loosed a considerable tempest against itself last week by inept wording of its order banning racetracks, theaters and other "frivolous construction." The experience serves to point up the difficulties that are sure to arise in imposing controls for a defense build-up when war fears are less than at white heat.

If we were at war, the NPA would probably have had no kickback from the statement that it would if necessary extend its controls to stop any non-defense job started "after the effective date of this order." But we are not at war. In fact the objective is to keep the economy operating at full blast, using peacetime as well as defense construction. To threaten non-defense construction before we even know the magnitude of the defense construction requirements defeats this objective. It frightens people from starting any construction without an ironclad priority.

Fortunately NPA quickly recognized the error of its policy declaration, when the Associated General Contractors called attention to its consequences. A policy statement says that jobs under way, if a more restrictive order is necessary, will not be stopped.

Even with the policy question settled, it may be questioned whether the statement had any place in the M-4 order. What the NPA plans to do in the future is more the subject of a separate announcement, than a paragraph in a set of instructions.

Patently this unfortunate experience focuses attention on the need for some definite over-all ground rules compatible with the objective being sought. It emphasizes that the military must quickly spell out its requirements in men, machines and materials; and that NPA should issue orders only after the most careful thought and drafting. Confusion can cut construction as surely as can controls, but in ways not intended—at the wrong time and in the wrong places.

Roofs on Fills

THE BURLINGTON RAILROAD'S ENGINEERS added a new refinement to embankment building when they applied an asphalt-penetration treatment to the crown of the fills on the new Chicago-Kansas City cutoff. (see p 32) This 1½-in. thick layer of waterproofed soil, directly under the ballast, is designed to keep moisture out of the central part of the fill where it can do the most harm. Modern soil selection and compaction methods were also used to assure non-settling fills, so that the whole construction is a far cry from the wheel-scraper-built embankments that were formerly the rule.

Actual costs of insuring greater stability for the fills on the new C B & Q line are not available, but it's an odds-on bet that future returns on the investment will far outweigh the initial expense. The Southern Pacific, which introduced modern compaction methods to railroad building about 10 years ago, has proof of this on its new line around Shasta Dam reservoir. The stabilized roadbed should require less maintenance and track-reconditioning under the pounding of heavy freights and high-speed streamliners. Nevertheless, the biggest return may be in goodwill, for a smooth-riding train makes satisfied passengers.

Increasing costs of operating railroad equipment and the highly competitive race by other common carriers to secure a greater portion of this country's passenger and freight business should serve as an incentive to other railroads to follow the Burlington's lead in building for the future.

Bond in Prestressed Concrete

FREQUENTLY, in talks and papers on prestressed-concrete beams, the statement is made that: "If the wires are 0.2 in., or less, in diameter, no permanent anchors are needed at the ends of the members, because the wires expand in diameter upon release and sufficient bond is created with the concrete." In view of the high unit stresses generally used for prestressing, such a favorable attitude toward bond of small wire should be embraced with caution.

For example, some British engineers who relied on bond of small wires have reported that members lost their prestress after about a year of service. Also, Eugene Freyssinet, French authority on prestressing, contends that the anchorage grip of large-diameter wires is much better than that of small-diameter wires, providing the distances between the various wires and the lengths allowed for the anchorages are increased in the same proportion as the diameter of the wires (THE ENGINEER (London), Nov. 25, 1949, p. 611). He points out that wider spacing of wires favors manufacture of better concrete; that allowable stresses in larger wires are usually lower than those for smaller wires, thus imposing less force on the concrete; and that the coefficient of friction of the larger rolled-and-heat-treated wires is much higher than that of smaller wires, which are wire-drawn.

Experience in countries overseas evidently indicates that reliance cannot be placed on bond merely because the steel is of small diameter. Other precautions to improve the bond may be necessary.

Engineers who are considering bonded anchorage for prestressed-concrete beams would do well to check experimentally the long-time bond characteristics of the prestressing steel they plan to specify.

Better for structural work

Cohesive, workable Duraplastic concrete mixes have proved their advantages for all types of construction work. Duraplastic air-entraining portland cement requires less mixing water for a given slump. Its increased plasticity aids proper placement and results in improved surface appearance.

Makes more durable concrete

Bleeding and segregation are minimized in Duraplastic air-entrained concrete. This fortifies the finished concrete against the effects of freezing-thawing weather. (Below, Promontory Apts. Architect: Pace Associates. Contractor: Peter Hamlin Construction Company—all of Chicago, Ill. Duraplastic cement used exclusively.)

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It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

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AIR-ENTRAINING PORTLAND CEMENT

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Makes Better Concrete at No Extra Cost

ENR-D-112

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

NOVEMBER 9, 1950 VOL. 145 NO. 19

Building shifts from housing to industrial construction

Predicted change of emphasis for construction industry begins to appear—Housing starts drop rapidly under pressure of controls while industrial building rises.

The predicted face-about for the construction industry—from home-building to industrial construction (ENR July 27, p. 21)—is actually happening.

The change is already measurable. It is probably coming faster than government officials thought it would, but it is coming, for once, along the lines of overall plans. What the effect will be on materials and labor, however, isn't yet clear.

Reason is obviously the heavy restrictions on housing credit that started after fighting began in Korea, and became more drastic recently.

• **The evidence**—As reported by ENGINEERING NEWS-RECORD and the Bureau of Labor Statistics, the facts are strikingly parallel and remarkably clear on housing.

BLS gages the housing field by reporting new starts of all housing units month by month. ENR measures the same field by reporting dollar-value of contracts let for mass housing only.

Housing starts, said BLS, reached an all-time peak in May of this year, at 149,100. In June the figure dropped slightly, to 144,300. July remained nearly steady, with 144,000. But in August the starts dropped to 141,000, and in September the cut was plain to see—to 115,000 (estimated).

Statisticians pointed out that this was no normal seasonal drop—26,000 less starts in one month can't be accounted for that way, particularly in view of unusally favorable fall weather this year. By comparison, a similar drop in starts took more than three months at the end of 1949 (also a favorable weather period), from a peak of about 106,000 in October to 78,000 at the end of December.

On the dollar-value basis of mass housing contracts reported to ENR, the cut is much more apparent and more drastic. From a peak of $486 million (for public and private construction) in June, the monthly totals fell to $169 million by October, and prospects were that they would fall farther in November.

By comparison, the peak dollar-volume month in 1949 was also June, with $232 million in contracts reported. This fell to 156 million in December—a much smaller cut.

• **Industrial up**—Industrial building (including utilities) has mounted steadily through the year.

Significantly, biggest totals have been reported for the three months since housing controls first went into effect. After running at an average of $98 million since January, total industrial contracts soared to $221 million in August; by October $235.6 million.

Last year in the same three months the totals were: $148.7 million; $92 million; $62 million.

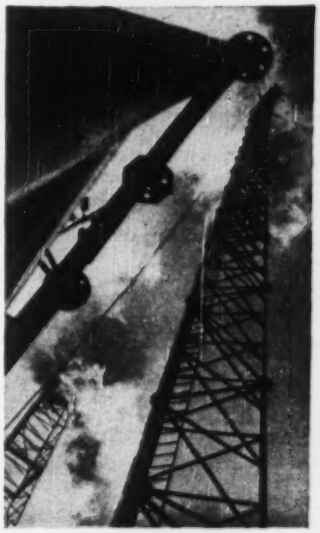
• **History**—The controls started with a letter at the end of July sent by the President of the HHFA.

The letter was in effect the pin that pricked the immense housing bubble—which might have reached, experts said, the huge sum of 1,250,000 starts by the end of 1950. Mr. Truman reduced by half the allowable increase in mortgages that could be insured by FHA; ordered an increase in the required down payment for both FHA and VA-approved loans; eliminated 100% veterans loans.

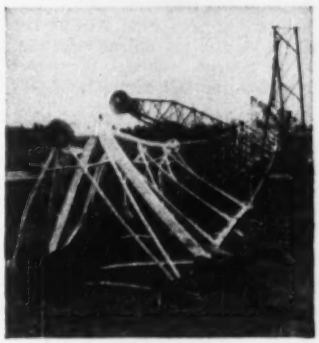
Other restrictions followed. In the National Defense Act of 1950 (ENR Sept. 7, p. 25) the Federal Reserve Board was given full power to regulate installment credit. And in October (ENR Oct. 12, p. 26) Regulation X was promulgated—drastically raising the amount of down payment required and enforcing other restrictions.

Meanwhile, the U. S. began to get other machinery into gear to control flow of certain defense-needed items (such as steel) by priority order.

• **Effect**—One effect was a slight easing in supply of some construction materials. One of these was in lumber. Wallboard, rock lath and roofing were also expected to ease.



GOING—At the 608-ft level, this transmission tower being erected for Station KHQ, Spokane, Wash., was about to become a windstorm victim when photograph was taken. Designed as a permanently guyed structure, tower was to be 826-ft high.—Wide World Photo



GONE—Part of tower's twisted wreckage lies alongside a section standing ready for erection. The new tower was to replace an 828-ft self-supporting unit that broke in half in storm a year ago. New three-sided pylon-type radiator was constructed of round steel members, 4 in. dia at base. Former tower was for many years rated world's tallest self-supporting antenna. Tower was assembled by Radio Towers, Inc., of South Gate, Calif. Design and fabrication was by International Derrick & Equipment Co., Torrance, Calif.

Union rejects contract; AGC suit may proceed

Carpenters don't want long-term pact in uncertain times; workers going back to general-contractor jobs

Southern California's AFL carpenters have flatly rejected a long-term contract and its provision for automatic pay boosts totaling 13 cents submitted to them by a union-AGCC negotiation committee (ENR Oct. 19, p 26).

The carpenters rejection automatically voids the proposed contract with the other five basic trades unions, since is adoption was predicated upon approval by all six basic trades—including the carpenters.

Despite rejection of the long-term pact—which would have run until May 1, 1952—union members are back on the job at AGC and non-AGC projects.

The rejection throws negotiations back where they were on July 10, when a straight 8-cents-an-hour pay boost was granted. This leaves the carpenters basic pay-rate at $2.20 an hour.

A union spokesman said that rejection came because the carpenters did not favor a long-term contract of any kind in these times of fluctuating prices.

• **AGC suit pending**—Contingent upon approval of the pact by the carpenters was the AGC's withdrawal of its $15,000,000 damage suit against the carpenters and certain non-AGC contractors (ENR Oct. 5, p 26). There was no indication whether the suit, in view of the union's rejection, will be pressed, although it seemed likely that the suit would eventually go to trial.

Under the rejected pact, carpenters would have received a $2.28 base hourly rate Oct. 30 (up 8 cents an hour) and another 5-cent automatic boost—five cents to be effective Oct. 30, and another 5 cents on May 1, 1951.

The other five basic trades were to have received a 10-cents-an-hour pay boost—five cents to be effective Oct. 30, and another 5 cents on May 1, 1951.

Under the rejection, the basic wages revert to July 10, 1950—at which time ironworkers and cement finishers received $2.20 an hour, engineers $2.12, teamsters, $1.65 an hour, and laborers, $1.57.

One union spokesman said that many contractors, including some AGC members, are presently paying $2.32½ hourly rates.

• **Restrictions aid general contractors**—However, the AGC has denied that its members are paying above-contract wages. An AGC spokesman said that union members of the six basic trades who have been receiving the $2.32½ an hour rate from some home-building, non-AGC contractors, are beginning once again to seek employment with AGC commercial and industrial contractors—in the face of government restrictions on private home-building.

AGC chapters in Los Angeles and San Diego counties probably will decide shortly whether to press the $15,000,000 damage suit or withdraw it, for the time being.

$31,000,000 turnpike bonds offered for sale

With the legal barrier of an attack on constitutionality of the enabling act cleared, a New York underwriting syndicate last week offered for sale a $31,000,000 bond issue to finance construction of the proposed Oklahoma Turnpike.

Sale of the bonds had been held up pending decision of the Oklahoma and U. S. Supreme Courts when taxpayers challenged the legality of the act creating the state Turnpike Authority. The state court recently ruled favorably on the act, and the U. S. Supreme Court dismissed an appeal.

The turnpike would stretch for 88 miles between Oklahoma City and Tulsa.

DeLeuw, Cather and Co., Chicago, has been preparing designs and alignment of the highway, pending court clearance of the project.

Texas road machinery tax awaits result of suit

Three Texas construction firms have obtained a temporary court order restraining collection of motor vehicle license fees on road machinery.

The case comes up for trial on Nov. 9 before District Judge Jack Roberts, who issued the temporary order. Collections meanwhile have been suspended.

Attorney General Price Daniel recently advised the State Highway Department that machinery which operates at any time on the public roads is subject to the motor vehicle license fee. The department began issuing special "machinery" license plates, and fixing charges according to weight and type, as is done for trucks. A 48,000-lb vehicle, the largest permitted in Texas, would pay $480 annual license.

Attorneys for Collins Construction Co., Heldensfels Brothers, and H. B. Zachry and Co., contended that road equipment is not a "motor vehicle" within the meaning of the Texas license law, and pointed out that none of the specific classes of licensed vehicles includes such machinery.

State attorneys disagreed, and estimated that Texas would gain about a $1,000,000 annual revenue from enforcing the tax.

Comptroller R. S. Calvert reportedly plans to collect the one percent state sales tax on motor vehicles, based on cost of the machines, if the license payments can be made to stand up in court.

NPA clarifies work-stop policy

Construction men breathed more easily last week after the National Production Authority withdrew its blunt warning that construction work on new projects might be abruptly stopped in the future. But the effects of the warning lingered on in the minds of investors and lenders who supply the money for new building.

NPA Administrator Harrison acted promptly to revise the original Section 22.2, unexpectedly inserted in Order M-4 forbidding new amusement construction (ENR Nov. 2, p 23). As rewritten, the section now reads:

"Policy of the NPA-BF. In the event that increasing material shortages clearly indicate the necessity for such action in the national interest, NPA may further limit the commencement of construction of additional types of projects which do not support the defense effort or increase the nation's productive capacity."

Contractors and builders gave quick approval to the amended warning.

Bankers and other lenders were generally pleased by modification of the order. But they indicated that construction loans would be weighed even more carefully than before. The earlier warning had made a strong psychological impression on them. It gave them added insight into government thinking on the future of construction.

CONSTRUCTION APPOINTMENTS

Last week the National Production Authority made three appointments affecting the construction industry.

John Haynes will have charge of all building materials but steel and lumber. James W. Follin, formerly General Fleming's deputy in the Federal Works Agency, will be in charge of construction controls, including M-4. Frank Creedon, former Federal Housing Expediter is chief of the Facilities Division.

State enters Iran Point Four picture, but private consultants stay

Impelled by over-riding political considerations, the U. S. State Department—backed by a $25,000,000 line of credit extended by the Export-Import bank—this week was moving rapidly into the business of modernizing and strengthening the middle-eastern kingdom of Iran.

The appearance of the State Department on the Iranian scene was immediately taken by pundits in Washington to mean two things:

1. That the U. S. government will move faster to implement President Truman's Point 4 program with government—rather than private—effort, and

2. Evidence of failure by private sources to properly handle execution of the program.

The first point is probably fact—business generally hasn't been too receptive to the Point Four idea, certainly it didn't accept with any enthusiasm schemes such as U. S. investment guarantees to increase the lure of investment abroad.

But there is considerable debate on the second point.

• **Background**—For more than two years, the Iranian government has been employing a coalition of 11 major U. S. engineering and research firms, under the name of Overseas Consultants, Inc., to aid it in implementing an elaborate development program.

This seven-year plan—developed by Iranians themselves with the aid of at least one U. S. concern (Morrison-Knudsen) some years ago—contemplated the expenditure of $650 million to improve the agriculture, industrial capacity, water supply, transportation and communications of the middle-eastern country. It included interconnection of existing railway lines; irrigation works; a highway network; grain storage and shipping facilities; some hydro power production; moves toward industrialization of the nation (ENR Nov. 3, 1949, p. 34).

• **Debate**—State Department spokesmen now are quoted as saying that failure to make appreciable headway with the program demonstrates the inability of private engineering firms to plan a nation's economic development—in fact, that basic development such as roads, health, agriculture, education, are best handled by government technicians. They conceded the field of industrial know-how to private enterprise.

But, according to Paul B. Coffman, president (since August) of Overseas Consultants, Inc., one fact perhaps is ignored: The type of contract that OCI signed with the Iranian government.

OCI is—in the purest sense—an advisor to the Iranian government. It is not a planner and not a builder.

"Under our contract," Coffman said, "we simply review the plans that the Iranians have made, and make recommendations concerning their feasibility, the priority they should receive in view of the country's general needs, estimate costs and economic probabilities."

• **Difficulties**—Coffman—who also is president of Standard Research Consultants of New York City—commented that OCI's advice frequently has been disregarded—for reasons largely outside the scope of the firm's contract.

An important reason is found in local politics. He explained that the Iranian parliament created a group known as the Plan Organization—which was to have been a non-political agency on the lines of TVA, to coordinate the various elements of the improvement program. This organization immediately ran into opposition from many sources—one of them the existing government ministries, which saw themselves losing some power and, more importantly, revenues. Some $30,000,000 in annual oil royalty payments were to be diverted to financing the program.

• **State steps in**—The State Department stepped into the obvious gap in the OCI-Iran relations, bringing high-level prestige and the money that could force some of the plan into action.

OCI—which was telling Iran how to spend its own money—couldn't pound on any desks for action. It was an employee—getting paid (and continuing to get paid, by the way) for doing an advisory job. The State department, though, speaks to Iran as an equal in rank—and as the representative of the banker.

And Iran's geographical position as a neighbor of Russia gave State another definite interest in the matter.

• **How it works**—The entry of the government agency into the Iranian picture doesn't cut OCI out—both State and the Iranians have asked the organization to stay on in its present capacity, according to Coffman. OCI's rotating group of 12 experts in various fields will continue to work as advisers to the Plan Organization, consulting also with the State Department.

Meanwhile, State already has started sending some specialists to Iran—concentrating its attention first on a $500,000 allotment aimed principally at improving agriculture and health.

Iran will contribute personnel, land, and equipment; State will contribute specialists, all of whom will report to an eight-member Iranian-United States Joint Commission for Rural Improvements.

• **Still in business**—OCI, incidentally, isn't only working in Iran. Mr. Coffman said last week that the company now has 11 other projects in various stages—one project a survey of private-power potential in Japan.

R. J. Faust to be executive asst. secy. of the A.W.W.A.

Raymond J. Faust of Lansing, Mich., has been appointed executive assistant secretary of the American Water Works Association, effective about Jan. 1, next. He is chief of the water supply section, division of engineering, Michigan Department of Health, and was graduated from Pennsylvania State College with the degree of B.S. in Sanitary Engineering in 1923 and received his C.E. from the same institution in 1935.

From the time of his graduation Mr. Faust has been in the continuous employ of the Michigan Department of Health, division of engineering. His duties covered the entire range of public health engineering in the water and sewage fields. In recent years his duties have been confined principally to water supply. His earlier routine field activities have been replaced by administrative responsibilities and contacts with municipal officials in relation to public water supply improvements.

Mr. Faust is at present a member of the Board of Directors of the American Water Works Association representing the Michigan Section.

NLRB clarifies "effect on commerce," restricts joint board's influence

Jurisdictions of two sorts stand out in current activities of the National Labor Relations Board. One sort has to do with the board's acceptance of jurisdiction; the other pertains to the effect of jurisdictional-dispute decisions made by the national joint board in the construction industry. (ENR Oct. 20, 1949, p23)

• **Yardstick for "effect on commerce"**—How NLRB will assert its jurisdiction under the Taft-Hartley law to a construction enterprise performing services for others engaged in interstate commerce is illustrated in a decision just handed down involving Scott Const. Co.

Scott does electrical construction and maintenance work for Dayton Power & Light Co. at Xenia and Wilmington, Ohio. IBEW Local 39 asked for a bargaining election among Scott's employees. NLRB took jurisdiction and ordered the election.

First NLRB found that Scott's business affected commerce. Then it had to decide whether it had a sufficient impact on commerce to warrant application of the federal labor law. In deciding in the affirmative, the board applied one of the several new yardsticks it is using in deciding when to accept or reject a dispute involving a small business.

The yardstick is this: The board will assert jurisdiction over a business affecting commerce if it furnishes at least $50,000 a year in services or materials necessary to the operation of (1) a public utility, (2) a radio station or other instrumentality of communication or (3) a business handling $25,000-a-year in goods or services in interstate commerce.

This fit Scott Const. Co. because it performs services for a public utility and the service is valued at more than $50,000. Scott has an annual payroll of around $80,000. Dayton Power & Light is its only customer.

• **Joint board's decisions limited in effect**—In the other significant case, it was found that jurisdictional decisions of the national joint board in the construction industry are not binding on employers who are not parties to the agreement under which such decisions are made.

Furthermore, a union cannot deny an employer the right to assign work to his own employees.

That is how NLRB interpreted the jurisdictional disputes section of the Taft-Hartley labor law in deciding a dispute between two AFL unions—electricians and hod carriers. It involved the laying of underground conduit for Middle States Telephone Co. in the construction of a telephone exchange at North Pekin, Ill.

The situation at Middle States Telephone was this:

Construction of the telephone exchange required the laying of 800 ft of underground conduit. This involved digging trenches, installing tile, pulling cables through the tile and constructing manholes.

Because of a shortage of its own employees, the telephone company contracted with one Stovall "to assist" in the construction by furnishing trucks and laborers as needed. After a few days, two of the company's plant department crews, members of IBEW, joined in the work, pouring concrete, laying foundations and excavating.

Stovall's men, members of the hod carriers union, protested this as a violation of its jurisdiction agreement with the IBEW. They insisted that the company take its IBEW men off the work. In the end, the job was tied up. The company filed charges with NLRB accusing the hod carriers of violating section 8(B)4(D) of Taft-Hartley—forcing the company to assign work to a particular craft.

In the midst of the dispute, the AFL-Construction Industry Joint Board handed down a decision on July 10. It directed Stovall to proceed with the work as originally assigned; that is, using laborers. Both the hod carriers and IBEW were directed to respect that assignment.

IBEW president Dan W. Tracy, however, interpreted the decision as affecting only workers for Stovall.

NLRB decided, as it has in several other instances, (1) that the hod carriers can't deny the telephone company the right to assign work to its own employees and (2) that a decision of the jurisdictional joint board in the construction industry is not binding on the telephone company. The board made clear, too, that it was not "assigning" the work in question to the IBEW.

Independent unions join to occupy AFL domain

In Milwaukee, Wis., an organization of independent unions announces that it has entered the building trades field in opposition to the strongly entrenched AFL building trades unions.

The group calls itself the Allied Independent unions. It claims that it already has more journeyman electricians in its organization than there are in the AFL counterpart. Figures, however, were not released.

Counsel for the AIU said the group of building trades workers had been proceeding quietly for seven months. The independent group's activities were brought into the open after Peter T. Schoemann, president of the Milwaukee Building and Construction Trades Council, AFL, had warned contractors in the area against the employment of building trades workers who don't wear the council button.

Among the building trades in which the independent group has set up locals so far, AIU counsel said, in addition to the electricians are the laborers, painters, plumbers and carpenters. A. Sorenson is AIU president.

CONVEYOR BRIDGE—This 139-ft belt conveyor, supported by a steel truss of highway-bridge design, helps speed shell aggregate for Houston, Tex., construction. The conveyor's rated capacity is 300 tons per hour. Shell, taken from the bottom of Galveston Bay, is brought by barges to this point, mixed into concrete for use in Houston's new street bases and building foundations.

CONSTRUCTION BUSINESS

October contracts shatter more records

Engineering construction again has blown the top out of half a dozen all-time records. October contracts reported here are the largest ever recorded by ENGINEERING NEWS-RECORD for this month, $950 million. This is 46% above 1948's October high.

This continuing high volume breaks all records also for the 10-month total which tops $9.9 billion to exceed any previous 12-months.

Private mass housing and commercial building for the 10-months at $3.6 billion exceed the previous 12-month record of 1949 by 50%.

Industrial building at $1.37 billion for the 10 months exceeds by 23% the previous 12-month high of 1946.

Private heavy construction as a whole tops $5.8 billion to break the previous 12-month record of 1949 by 50%.

Highway contracts at $1.07 billion in 10 months top the previous high year, 1948, by 7%.

Volume to-date in the 48 states, $9.9 billion, is 48% higher than for the 10 months last year.

For October alone Midwest and West of Mississippi showed large increases over September of this year. Large gas pipeline awards contributed to this pattern. The other sections follow the more usual seasonal pattern by falling off some.

Private mass housing contracts fell million. The monthly average through volume for any month this year.

Industrial building awards with a total volume $235.6 million are the highest of the year. October was the third consecutive month this year in which these contracts topped $200 million. The monthly average through July was $98 million. Through October it is $136.6 million.

Street and road contracts for October are 45% more than last year but at $87.5 million are down seasonally from the $106.5-million monthly average for 1950 to date.

Public building awards turned in their largest month since January and at $174.2 million top last October by 69%.

Thus the emphasis in construction this fall has moved from private to industrial and public building.

Mortgage premiums ruled usury if over 6 percent

A ruling that may have an effect on construction financing was recently made by the Kings County Supreme Court in New York. It says that charges made by lenders for permitting prepayment of mortgages before they are due are usurious if they, plus the interest already paid, exceed 6% per year for the period that the mortgage has been in force. Thus if the mortgage rate has been 4%, only an additional 2% could be charged as a prepayment premium.

If the ruling is sustained by higher courts, real estate interests see changes in mortgage procedures. Higher initial fees for closing a mortgage might be one, and there would be others as lenders sought ways to offset the loss in revenues that the ruling would cause.

Building cost roundup

Building costs through September are up 6-15% as measured by the theoretical cost indexes and up 3-9½% as measured by the contractor cost indexes. This increase is measured both from December 1949 values and from the low in the 1949 dip in the otherwise upward trend since War II.

Individual variations within these ranges show the American Appraisal index at 513 up 6%. At the other extreme both Marshall and Stevens at 413 and Smith Hinchman & Grylls index at 447 are up 14% since December with the latter up 15% from its 1949 low.

Of the contractor indexes Fuller is up 3% to 384 for October, Turner 6% to 433, Alberthaw 7½% to 330, Fruin-Colnon and Austin both up 9% to 416 and 324 respectively. Where October values are available they are consistently higher than the September indexes on which the foregoing percentage increases are based.

The contractors have absorbed much of the current price rise in materials and labor. Their indexes went down faster, stayed down longer and have increased less than the price movements in labor and materials.

Building cost indexes show trends—1913 = 100

Cost Index	1949 Dec	1950 Low	1950 Sept	1950 Oct
ENR Construction	480	472M	530	534
ENR Building	353	349M	393	396
American Appraisal*	483	483D	513	...
Assoc Gen'l Contrs.	345	339F	369	371
E. H. Boeckh	368	364Jy	395	...
Smith Hinchman & Grylls*	392	388Jy	447	454
Marshall & Stevens	361	361D	413	...

* corrected for labor productivity

Contractor indexes				
Alberthaw	307	307S	330	...
Fuller	373J	374O	...	384
Turner	407	407Jn	433	...
Fruin-Colnon	382	380Jy	416	420
Austin	298	298S	324	...

(J-Jan, Jn-June, Jy-July, M-May)

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—OCTOBER, 1950

Engineering News-Record *reports continental U. S. Construction projects of the following minimum costs — Waterworks, excavation, drainage and irrigation,* $28,000; *other public works* $50,000; *industrial buildings,* $68,000; *other buildings,* $250,000

Four Weeks — Thousands of Dollars (000 Omitted)

	October, 1950							U. S. Cumulative Ten Months		% Change	Canada Oct.,
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1950	1949	'49–'50	1950
Public Works											
Waterworks	1,049	3,183	2,102	1,113	8,823	1,234	17,504	191,252	178,347	+ 7	723
Sewerage	2,231	5,718	1,872	4,519	5,617	4,047	24,004	229,754	225,249	+ 2	1,478
Bridges	485	3,232	13,018	3,410	3,908	5,183	29,236	308,422	280,871	+10	645
Earthwork and waterways	...	392	1,714	519	3,577	4,243	10,445	337,265	448,580	−25	1,041
Streets and roads	2,316	22,063	15,266	13,313	23,819	10,741	87,518	1,065,214	783,604	+36	2,152
Public buildings, residential	...	10,234	8,248	1,993	7,536	1,141	29,152	257,586	332,885	−23	5,359
Other public buildings	6,547	29,958	20,825	15,172	54,317	18,198	145,017	1,388,938	1,017,004	+37	7,589
Unclassified	1,466	3,539	9,830	1,926	4,020	10,377	31,158	333,921	267,500	+25	2,626
Total Public	14,094	78,319	72,875	41,965	111,617	55,164	374,034	4,112,952	3,535,040	+16	21,607
Federal government (included in above classifications)	765	2,045	15,847	5,422	44,242	10,771	79,092	1,012,295	887,896	+14	9,286
Private											
Bridges	...	...	863	...	1,987	...	2,850	9,745	9,418	+ 3	...
Industrial buildings	1,000	24,686	35,888	126,803	33,131	14,136	235,644	1,368,614	854,314	+60	10,970
Com'l. buildings, residential	1,665	55,812	19,402	10,470	37,396	15,327	140,072	2,786,754	1,452,515	+92	8,878
Other commercial buildings	3,433	13,495	7,488	13,714	29,487	7,280	74,897	823,816	495,355	+66	5,155
Unclassified	...	1,085	2,860	25,766	92,026	1,292	123,029	815,961	357,976	+128	72,666
Total private	6,098	95,078	66,501	176,753	194,027	38,035	576,492	5,802,890	3,169,578	+83	97,669
Total Engineering Construction:											
Oct., 1950 — 4 weeks	20,192	173,397	139,376	218,718	305,644	93,199	950,526	...	...	...	119,276
Sept., 1950 — 4 weeks	31,978	225,770	179,453	161,834	261,824	98,671	959,530	...	...	...	71,630
Oct., 1949 — 4 weeks	24,244	140,283	90,844	90,659	141,123	66,029	553,482	...	...	...	74,045
Ten Months — 1950	431,869	2,351,620	1,574,066	1,533,693	2,518,014	1,505,680	...	9,914,942	...	+48	623,314
Ten Months — 1949	293,719	1,749,064	1,001,862	873,429	1,775,452	1,011,092	...	...	6,704,618	...	458,814
% Change '49 to '50	+47	+34	+57	+76	+42	+49	...	...	...	...	+36

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 81, went to press.)

New Jersey Turnpike—George M. Brewster & Sons, Inc., Bogota, N. J. was low bidder for improving 21-mile section of New Jersey Turnpike in Burlington and Mercer Counties. Bids, opened Oct. 31 by the New Jersey Turnpike Commission, Trenton, ranged from $6,040,855 to $7,267,355 depending on type of surfacing and shoulders.

Water Supply—City of Houston, Tex. has selected Ambursen Engineering Corp., New York, N. Y. to design the $13,000,000 water supply project for that city, which includes the $7,500,000 San Jacinto Dam, filter plant, reservoir, pumping plant and pipe lines. Horner & Shifrin, of St. Louis, Mo., Lorenz G. Straub, Minneapolis, Minn. and J. Neils Thompson, Austin, Tex. are consulting engineers.

Bridge—Bids will be taken Nov. 30, by the Florida State Highway Department, at Jacksonville, for the construction of the 7,375-ft John E. Mathews Bridge over the St. John's River, at Arlington, Duval County. Bids are for completing the substructure and building the superstructure. This is part of $42,000,000 express highway, which will eliminate Florida's worst traffic bottleneck.

Tank Furnace—A. Bentley & Sons Co., Toledo, O. will construct a tank furnace at the Ottawa, Ill. plant of Libbey-Owens-Ford Glass Co., Toledo, O. Estimated cost is $3,000,000. William Hasselbach is chief engineer for owner.

Research Laboratory—Grove, Shepherd, Wilson & Kruge, Inc., New York, N. Y. was low bidder at $3,862,750 for constructing National Center for Water Pollution Research at Cincinnati, O., when the Public Buildings Administration, Washington, D. C. opened bids Nov. 1. The Public Health Service will use the building for research and training of personnel.

Roads—Alaska Road Commission, Juneau, awarded contract for Section H, Richardson Highway to McLaughlin Construction Co., Great Falls, Mont., at $3,801,641 and for road from Big Delta to Sears Creek to Babler Brothers & Rogers, Milwaukee, Wis., at $1,884,391.

Biology Building—S. N. Neilsen, Chicago, Ill. has been awarded contract to construct Biology Building 2, at Argonne National Laboratory, near Lemont, Ill. by the U. S. Atomic Energy Commission, Lemont, at $3,999,000. Voorhees, Walker, Foley & Smith, New York are architects.

Power Plant—City of Brownsville, Tex. plans doubling capacity of electric power plant and distribution lines. Cost will be about $3,000,000. E. W. Watts is city engineer.

Apartment—Baldwin Brothers, Inc., Erie, Pa. plans to build an apartment group in Erie to cost $3,000,000. Phillip Freidman, Pittsburgh, is architect.

Filtration Plant—Northern Indiana Public Service Co., Gary, Ind., will take bids Dec. 20, for filtration plant at Gary to cost $2,000,000. Alvord, Burdick & Howson, Chicago, are consulting engineers.

Apartments—Department of the Army, Fifth Army, Chicago, Ill. has selected Herbert Greenwald and Samuel Katzen, of Chicago to construct, manage and finance two apartments in Chicago for Army personnel. Estimated cost is $2,400,000. A. Epstein & Sons Co., Chicago, is architect. Sponsors are now asking bids for construction of project.

School—School of Commerce, Laval University, Quebec City, Que., plans constructing School of Commerce building to cost about $2,000,000. L. Marnguy Sillary, is architect. Contract has been awarded to Komo Construction, Ltd., Quebec City, at $1,500,000 for two miles of tunnels and utilities at the school.

Smelter—Cobalt Chemical & Refinery Co., Toronto, Ont., plans constructing smelter at Cobalt, Ont. Cost will be about $2,000,000.

Apartment Hotel—E. L. Lamberth and H. D. Lewis, Dallas, plan constructing apartment hotel, in Dallas, cost to exceed $3,000,000.

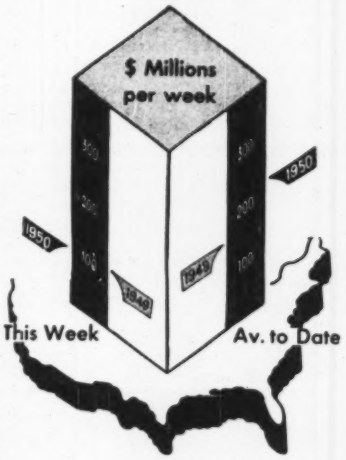
Hospital—John K. Ruff, Inc., Baltimore, Md. has been awarded contract to construct a hospital at $1,082,400 for the Associated Jewish Charities, Baltimore. James R. Edmunds, Jr., Baltimore, architect. H. Walton Redmile, Baltimore, mechanical engineer and Crout, Snyder & Crandall, Baltimore, structural engineer.

Wharf and Harbor Improvements—Brazos River & Harbor Navigation District, Freeport, Tex. will hold election Dec. 15 to vote $1,725,000 bonds for wharf and harbor improvements. J. Russell is engineer for district.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Constr. Cost.	Nov. '50	527.85	253.74	110.67
Bldg. Cost.	Nov. '50	388.85	210.20	110.56
Volume	Oct. '50	471	191	136



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Nov. 9, '50*	Cumulative 45 wks. 1950	1949	% chge
Federal	$9.2	$1,044.9	$906.9	+15
State & Mun.	32.9	3,239.1	2,759.5	+17
Total Public.	$42.1	$4,284.0	$3,666.4	+17
Total Private	39.8	5,932.6	3,319.4	+79
U. S. Total. .	$101.9	$10,216.6	$6,985.8	+46

Contracts by type of work

	This Week*	Cumulative 45 wks. 1950	1949	% chge
Waterworks.	$1.5	$194.8	$183.4	+6
Sewerage ..	3.3	249.8	235.0	+6
Bridges	3.6	327.8	312.7	+5
Highways ..	10.2	1,093.3	810.6	+35
Earthwork, Waterways	1.2	348.7	456.5	−24
Buildings:				
Public ...	34.1	1,436.5	1,054.1	+36
Housg., pub.	4.8	302.4	345.4	−12
Housg., priv.	10.8	2,828.1	1,508.9	+87
Commercial	9.9	854.2	512.5	+67
Industrial .	13.3	1,408.6	862.5	+63
Unclassified .	9.2	1,172.3	704.3	+66

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

* Short week due to Election.

New capital for construction

Figures not available.

Laboratory tests of welded rigid frames

Welded structural steel frames develop elastic deformations, under severe loadings, that vary considerably from theoretical analysis. More accurate designs of rigid frames are made possible by thorough strain-gage tests on full size specimens.

These conclusions were contained in three coordinated papers presented at the structural session of the 31st annual meeting of the American Welding Society in Chicago Oct. 23-27.

Basing their conclusions on exhaustive tests made on a welded rigid frame, C. G. Peller, Valparaiso University; and L. E. Grinter and John Butkus, both of Illinois Institute of Technology, predicted that the trend in such designs may soon be based on plastic rather than elastic deformations.

Using SR-4 strain gages, they found that for overload of the welded frame, sufficient stresses were developed to cause plastic flow in several parts of the frame. This was particularly apparent in the inner portion of the knee, closest to the concentrated load. These stresses, however, did not cause sufficient damage to disqualify the frame as a useful structure.

Vertical stiffeners at the point of loading helped develop the full strength of the web at that point.

And finally, although strain readjustments were observed with each increment of loading of an overload nature, repetitions of this loading produced regular and consistent actions in the frame. It was also observed that this stabilizing effect of repeated loadings continued up to a loading that was believed to be close to ultimate collapse of the frame.

• **Welded joints**—Tests on 15 welded joint assemblies, conducted by A. A. Topractsoglov, L. S. Beedle and B. G. Johnston, all of Lehigh University, are to be used in studying the carrying capacities of welded rigid portal frames loaded in the plastic range.

Sponsored by several interested groups in the field of structural welding, the investigation centered on determining the strength, rigidity and economy of different joint designs. All connections were tested to failure which occurred by plastic instability that was initiated by local buckling. It was felt that the provision of a modest amount of lateral support in a rigid portal frame will give improved moment-rotation characteristics of the joints.

• **Fillet weld spacing**—Intermittent fillet welds may be more than adequate to satisfy strength requirements of a connection, but the clear space between such welds must be short enough to preserve the local buckling resistance of the components of the member. This was the conclusion of a paper prepared by C. H. Norris, D. A. Polychrome and L. J. Capozzoli, of the Massachusetts Institute of Technology, describing a current research project at MIT to develop reliable specifications on the use of intermittent fillet welds connecting component parts of structural members.

International Bridge group announces paper subjects

The list of subjects upon which papers may be written for the Fourth Congress of the International Association of Bridge and Structural Engineering now is available.

It was approved by the permanent committee at a June meeting in Paris and is announced at this time so that those who wish to prepare papers may have ample time. The Congress will be held in Cambridge, England, the latter part of August, 1952.

Among the subjects are dynamic problems, welding, light metals and prestressed concrete. Additional information is available from the Secretary of the U. S. Council of the association, Thomas C. Kavanagh, Pennsylvania State College, State College.

Court criticizes plumbing ordinance enforcement

The Arizona supreme court has sharply criticized the enforcement of plumbing ordinances by Phoenix as "arbitrary and discriminatory."

Suit was brought by the Thrift Hardware Co. which challenged the city's refusal to permit installation of certain plumbing fixtures because they did not conform with the ordinance.

The supreme court criticized the plumbing inspectors for refusing to permit installation of any fixture with slight blemishes.

It directed that the city be enjoined from refusing to permit installation of fixtures which meet requirements of quality and markings and whose defects do not impair efficiency.

The city also was ordered to refrain from discriminatory labeling practices and from refusing to permit installation of concrete water-closet tanks solely because they are concrete.

The court order held that the city cannot prohibit installations unless there are defects which would cause them to leak or fail to function.

In defense of the sale and use of Class B fixtures, the court held that the city does not enforce the ordinance uniformly against all retail stores, allowing some to label plumbing fixtures with their own brand, while refusing that right to others.

TALLEST WILL BE TALLER—Steeplejack fastens lines of temporary television tower atop the Empire State Building, New York. Work is in conjunction with construction of a new tower that will add 222 ft to the world's tallest building's previous 1,250 ft (above street) height, bringing the total to 1,472 ft. When the tower is complete in January it will accommodate the antennas of three FM transmitters and Manhattan's five television stations, extending the broadcasting radius to 52 miles. (Wide World photo)

Maryland road test has limitations

Last week ENGINEERING NEWS-RECORD reported results of the first four months' truck-loading test on a four-lane highway near La Plata, Md. (ENR Nov. 2, p 25). Trucks with 18,000-lb axle loading and 32,000-lb tandem-axle loading did relatively little damage, compared to trucks with 22,400 lb on single axles and 44,800 on tandem axles, thus appearing to conform to weight limits generally recommended by highway engineers. Damage, measured in terms of feet of new cracks that appeared during the test in four months, ranged from 82 ft for the lighter single-axle load to 2,968 ft for the heavier tandem-axle load.

Officials connected with the test, however, are cautious about jumping at conclusions. As a full-scale research project carried out in the field, the Maryland test has its physical limitations. Within those limits, test factors and instrumentation are worked out to restrict the variables as closely as possible to the axle loadings of the trucks on the four lanes. In some respects, the organization of the project gives the pavement advantages that it would not have under normal conditions of highway operation which obviously might vary considerably at times from those of the experimental test.

For example, trucks run both directions in each lane—24 hr a day and seven days a week. Travel in one direction would have been preferred, in order to allow normal faulting at the joints, but the layout made that impractical. The project is set up on a 1.1-mi section of Maryland Route 301, about 45 mi south of Washington, with highway traffic bypassed over an existing parallel road.

Shoulders and joints on the test project also get more frequent attention than they would under ordinary highway maintenance. Maryland maintenance crews fill joint openings about twice a month and work the shoulders even more often—dragging, blading and adding gravel when needed.

• **Pumping increases**—Despite this attention, pumping of the subgrade has increased steadily during the months of the test, particularly under the heavily loaded lanes. As might be expected, the amount of pumping, both at the joints and along the free edge of the pavement, increases in about the same ratio as the cracking of the concrete surface.

Thus in the lane with the 18,000-lb single-axle loading the greatest pumping on any one day in September occurred at 13 joints and at 59 places 300 ft in length along the free edge. For single-axle 22,400-lb loading, the top September figures were 26 joints and 73 free-edge places having a length of 500 ft.

In the tandem-axle lanes, the 32,000-lb section on one September day pumped 48 joints and 138 edge spots totaling 1,200 ft in length. The parallel lane (44,800 lb) at times during September was pumping at 70 joints and 144 edge places 2,600 ft long. In other words, almost all of this section —made up of 71 40-ft slabs—was affected.

This tendency to pump—and the character of the subgrade responsible for it—gets some criticism from trucking people. Preliminary test borings along the edges of the pavement—at 100-ft intervals, staggered on the two sides—indicated that most of the subgrade probably consists of fine-grained plastic soils. These soils make unstable subgrades unless they are placed with great care and are kept at relatively constant moisture content throughout the year.

Only about 15% of the subgrade on the test project appears likely to have good granular soil characteristics. This portion of the subgrade—under parts of the single-axle test lanes—apparently is developing less pavement cracking than other areas of the same lanes. Detailed soil studies, requiring borings through the pavement, will be made after the traffic test has been completed.

• **Road has lasted well**—Despite any possible subgrade deficiencies, the pavement now being tested had stood up well since it was constructed in 1941. For example, the two tandem-axle lanes had developed only 300 ft of cracks in 9 years. In less than four months of accelerated axle-load testing, they added 3,000 ft of new cracks.

Pavement on the project is 24 ft wide, constructed in two 12-ft lanes of 9-7-9-in. cross-sections. The pavement is reinforced with 59.4-lb welded mesh of No. 2 wires. Expansion joints are spaced 120 ft apart, with dummy-type contraction joints at 40-ft intervals between them. There are load transfer dowels at all transverse joints and tie-bars between the two lanes through the plain butt-type longitudinal surface joint.

For the test project, guide lines in two colors are painted the full length of each lane to steer successive wheel passages over the pavement in accordance with average truck operations on this type of highway. A mechanically actuated signal box in the cab shows the truck driver which path he should follow on each trip.

Spacing of the two axles in each tandem pair ranges from 50 in.—for the two 32,000-lb loads—to 52 and 55 in. for the 44,800-lb loadings. Front axles of the two heaviest vehicles carry 9,000-lb loads; the other two tandem-axle trucks have 8,000-lb loads on their front axles.

In addition to major data already briefly mentioned, the project staff is measuring and recording pavement settlement, stresses and deflections under wheel loads, slab warping, surface roughness, rainfall and many other items that will yield valuable information. Concrete test beams and cores were taken from the pavement before the traffic operation began, and others will be removed after the trucks stop operating to obtain comparative data.

Highway departments of eleven states and the District of Columbia are financing the money cost of the project, and the Bureau of Public Roads is furnishing the technical personnel and instruments. Truck manufacturers supply the trucks, and the petroleum industry is contributing the gasoline and lubricants required for the experiment.

• **Personnel**—For HRB, a four-man project executive committee directs the road test, with the help of a larger advisory committee. On the advisory committee, the American Trucking Associations and the Automobile Manufacturers Assn. (Motor Truck Division) both are represented, along with the eleven state highway departments, the District of Columbia, the BPR, and the Department of the Army.

All elements of the advisory committee agree that the test project is being run with intelligence and integrity. Fred Burggraf, associate director of HRB, is chairman of the two project committees, and A. Taragin, on loan from BPR, is project engineer at the site.

Turnpike authority buys N. J. highway

The New Jersey highway department could mark up at least one road as paid off recently, after receiving a check for $5,276,223 in payment for it.

The money came from the New Jersey Turnpike Authority which bought the section of State Route 100 in Middlesex County to become part of the Turnpike Authority's 118-mile toll road, now under advanced construction.

The Authority had earmarked $11,050,000 of its $220,000,000 bond issue for reimbursement of the highway department for its expenditures on Route 100. The balance will be paid upon completing cost studies, according to Paul L. Troast, Authority chairman.

New Jersey link proposed for Pennsylvania pike

Pennsylvania's Governor James H. Duff took time Oct. 23 during dedication exercises for the Pennsylvania Turnpike's eastward extension to announce plans for still another eastward link for the turnpike—one of recent items in the news about the route. The new link would run about 40 mi, from the latest eastern terminus near Norristown, to Bordentown, on the New Jersey turnpike.

Purpose of the extension would be to bypass non-Philadelphia traffic. It will be necessary for the 1951 legislature to approve the project, estimated to cost about $35,000,000.

Later in the week, in Harrisburg, the Pennsylvania State Highway Planning Commission took a stand against what it termed "over-extension" of the Pennsylvania Turnpike. Although the Pennsylvania Turnpike is an important part of the state highway network, the commission said, "Over-extension could defeat the primary purpose of our system—to provide adequate, free roads for all citizens."

The comment was part of a preview on a 14-month study of a long-range highway improvement program. The commission said it will deal fully with the toll-road question in its final report to be made to Governor Duff this month, and to the 1951 legislature.

Pennsylvania Railroad improvement nears finish

Elimination of four restricting tunnels and straightening of curves on the Pennsylvania Railroad's main line between Pittsburgh and Columbus, Ohio, will be complete soon.

The railroad calls the job a "multi-million dollar project." Earth and rock excavation amounted to 185,000 carloads.

When the route is opened, larger type box cars, and unusually large shipments on flat cars, which formerly moved over lengthy detours because of the old tunnels, will move on the direct short line.

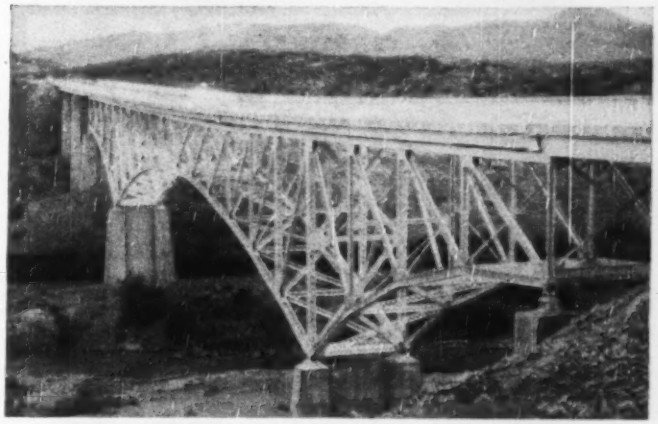
Texas truckmen announce plan to govern selves

The Texas Motor Transportation Association is undertaking what is claimed to be the nation's first program of policing the truck industry—from the inside.

TMTA's legislative committee has outlined a broad policy urging members to keep within the bounds of their load permits, and to obey Railroad Commission rates. The association also is backing a movement to get more weight inspectors and rate-enforcement officers for the Department of Public Safety and for the Railroad Commission.

Col. Homer Garrison, Jr., director of public safety, described the cooperative plan as "wonderful" and says he had hoped for years that the truck industry would do it.

James E. Taylor, TMTA's managing director, says his group hopes to see the law enforced because enforcement "will take the profit out of willful overloading."



GUTHRIE BRIDGE, 726-ft cantilever span over the Gila River, is biggest phase of Highway 666 Shortcut, $1,315,523 stretch linking Clifton-Morenci area with Safford valley in Arizona. Central truss has span of 300 ft and is 100 ft above river bed. Bridge, built on vertical curve, has 7% grade. It was designed by Ralph Hoffman of state highway department bridge division, was fabricated by Allison Steel of Phoenix, and was erected by the Vinson Construction Co.

New road keeps dollars at home

Arizona is gaining ground in its highway program to keep trade dollars within the state. Remote sections isolated from the big trade centers of Tucson and Phoenix are being tied to market centers by shortcut roads.

Latest is a 26-mi section of Highway 666 which trims 28 mi from the previous route between the copper-rich Clifton-Morenci area and the Safford valley in Eastern Arizona.

Site of Phelps-Dodge open pit mine and reduction works, the Clifton-Morenci communities have a $9,000,000 yearly pay roll, and the company spent $11,000,000 last year for supplies.

Because it was easier to drive to El Paso, Tex., or to New Mexico than to Phoenix or Tucson trade centers, much of this volume was lost to Arizona.

The shortcut eliminates a big triangle drive to Duncan, nearly at the New Mexico border, and keeps traffic headed into Arizona.

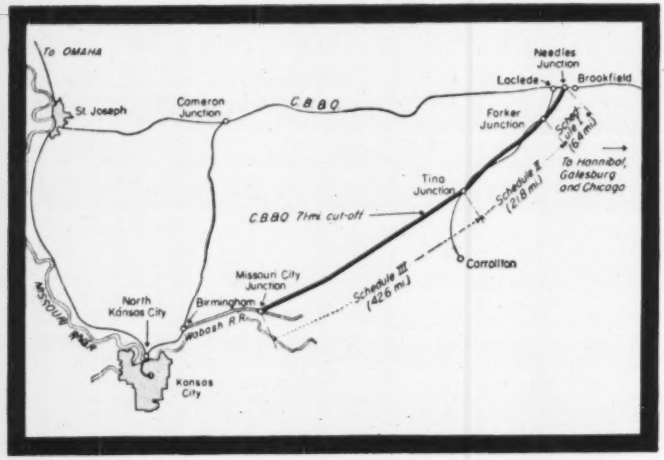
Biggest single phase of the $1,315,523 shortcut is Guthrie Bridge at the Gila River. The 726-ft cantilever truss crosses the river and railroad tracks and was built at a cost of $385,000. The main span is 300 ft long and the distance from the deck to the stream bed is 100 ft. The structure is built on a 7% vertical curve.

Another trade-line road in the making is the cutoff between Kingman, at the northwest corner of the state, and Central Arizona. This road slices through some of the most rugged country in the state and will require an 875-ft suspension bridge 400 ft above the canyon bed at Burro creek. Nearly 50 mi of the 177-mi route have been developed.

Newark Bay bridge proposed to improve industrial area

A highway construction program for the Jersey City-Bayonne, N. J., waterfront, with a link to Newark by a bridge across Newark Bay, has been proposed by State Highway Commissioner Ransford J. Abbott.

In the plan, which would cost more than $80,000,000, the bridge would link with a new highway leading to the Holland Tunnel, as well as with other new routes that would facilitate great industrial growth in the Jersey City-Bayonne area.



BY CUTTING in a direct line from Needles Junction to Missouri City Junction, 22 miles are saved over the present Brookfield–Cameron Junction–Birmingham route.

Short-cut through Missouri

- **Shortens the Chicago-Kansas City line 22 miles**
- **Future passenger schedules will be reduced 5 hours**
- **Straight alignment; minimum grades; and compacted fills**

ANYONE WHO THINKS that railroad construction on a large-scale is outmoded hasn't seen the new 71-mile cut-off being built by the C B & Q RR on its Chicago-Kansas City line.

Moreover, any mud-shoe editor visiting the project will get a liberal education in contemporary railroad design and construction techniques. Embankments are being compacted to a density never found in the early days of railroad construction; trestle bridges are being built much faster than by conventional methods of former years; and today rock cuts totaling 750,000 cu yd are being precision-blasted by the engineers to near-theoretical outlines of the side slopes.

• **Shortens line 22 miles**—The new line—called the Centennial Cut-Off in honor of the Burlington's 100th birthday last year—will shorten the Chicago-Kansas line by 22.35 miles. It will be completed and in service by the end of 1951.

As shown in the accompanying map, it takes off just west of Brookfield, Mo., and makes a bee-line southwest to Missouri City Junction. Burlington trains then will use a 16-mile stretch of Wabash Railroad track to Birmingham, where the two railroads are paired, then on into Kansas City. The new cut-off forms one side of a triangle; other two sides connecting Brookfield-Cameron Junction-Birmingham.

The Burlington has dreamed of this 71-mile, $16,000,000 cut-off for a quarter-century or more. But its inception dates back nearly 50 years.

The present C B & Q line from St. Joseph to Palmyra and Hannibal, Mo. was originally built during 1851-1859 by the old Hannibal and St. Joseph Railroad Co. The line from Cameron Junction to North Kansas City—known as the Kansas City Branch—was completed in 1867. The C B & Q acquired the H & St J lines in 1901.

• **Fits 1902 location**—Incredible as it may seem, when the final location of the new cut-off was completed by the latest methods of photogrametric surveying, it practically duplicated one surveyed in 1902 by the C B & Q, using laborious survey methods of that era. About the only differences between the two location surveys are that the older one had more curves to avoid deep cuts and embankments.

The sole purpose of the new cut-off is to provide better and faster through passenger and freight service between Chicago and Kansas City. There will be no station stops in the 71 miles.

The overall plan contemplates several alignment and grade improvements and a 10-mile shortening of the 200 miles of line between Brookfield and Galesburg, Ill. The rest of the line to Chicago is built for high speed traffic. When these improvements are completed it will be feasible to operate Zephyrs on a 7½-hr schedule between Chicago and Kansas City. Present passenger-train schedules are 12 to 13 hours.

• **Design standards are high**—The Burlington engineers are building their new cut-off to remarkably high requirements as to grade, alignment, width of cuts and stability of embankments. With one or two exceptions, there are no unsightly side borrow pits, when extra borrow is needed for embankments it is secured by widening adjacent cuts.

The new line is designed for 90-mph passenger traffic and 60-mph freight service. Maximum grade is 0.8% and maximum curvature is 1-deg. One tangent is 16 miles long. Railroad bridges are designed for Cooper's E72 live load, and highway overpasses for H20 loading of the American Association of State Highway Officials.

• **Dense embankment**—The Burlington is building its embankments to a density specified in high-type highway and airport construction.

All embankments are built to a density of 95% compaction or better at the optimum moisture content, according to the AASHO method. In general, the sandy clay loam meets compaction requirements satisfactorily except when it contains excess moisture. In such cases (when compaction drops below 95%) grading is suspended until the material becomes properly aerated. Some deposits of organic silt, unsuitable for embankment material, are wasted.

• **Wide cuts**—Cuts are made wider than those ordinarily found on railroad construction, to permit off-track maintenance of ditches and slopes. Those in earth have a base with of 50 ft, while rock cuts are 40 ft wide at the bottom. Cut slopes are 1 on 1½ in earth, and 1 on ¼ in rock. Maximum depth of cut is 95 ft at the center line of track.

Embankments are built on slopes of 1 on 2. Those under 15 ft have a top width of 24 ft. Above 15 ft, the top with is widened 1 ft for each 15 ft of height. The maximum fill is 46 ft, with a top width of 26 ft.

• **Waterproofed fills**—Another innovation in railroad construction is that of protecting the embankment from rain seeping through the ballast and into the fill. All embankments over 25 ft high are waterproofed over their entire

crown-width with two applications of penetration asphalt.

This asphalt treatment is applied after the embankment is completed and prior to laying the subballast. The top 1½ in. of embankment is first scarified. Then 0.7 gal of liquid asphalt per square yard is applied by a pressure distributor. When this has cured to a tacky consistency, a second shot of 0.5 gal per sq yd is applied, followed by light rolling with pneumatic-tired equipment.

Most of the cut-off is on new right-of-way. About 22 miles of new track between Tina Junction and Forker Junction on the Lackede-Carrollton branch, is located either on the old roadbed or next to it.

The old track, including ties, fastenings and rails, is shifted sideways by a team of bulldozers. Up to 3,300 ft of track has been shifted an average of 20 ft in an 8-hr day. The old track, which is reballasted temporarily with sand, will be salvaged following completion of the new line.

• **Aerial location**—A great deal of time and money were saved in locating the line by purchasing aerial photographic transparencies of the country, adding topography from USGS quadrangle maps, and other data.

These tracings became part of the location and design plans and were a valuable aid to both the contractors and the engineers, in indicating the extent of the work to be done.

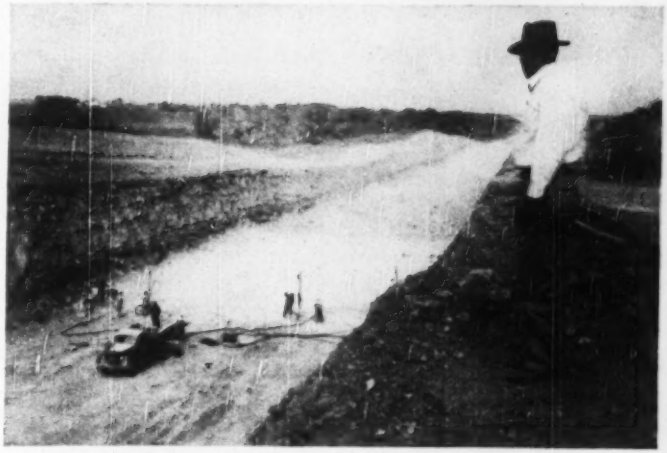
Grading and structure contracts were awarded early last spring for the entire 71 miles which is separated into three sections or schedules.

Schedule I extends 6.4 miles from Needles Junction, just west of Brookfield, to Forker Junction; Schedule II, 21.8 miles from Forker Junction to Tina Junction; and Schedule III, 42.6 miles from Tina Junction to Missouri City Junction, 28 miles east of Kansas City.

There are three prime contractors and one subcontractor on grading. Bridges are being built both by prime contractors and under subcontracts. All construction materials are being furnished by the railroad company, which is also doing its own ballasting and track work on Schedules I and II, and will probably do this work on Schedule III.

A Cook's tour of the entire project—by automobile crawling up, down and along embankments in various stages of construction, and by motor-drawn trailer over 22 miles of the Carrollton Branch line—was rewarding in its revelation of the variety of fast-moving construction procedures.

In general, earth cuts are opened up with small scoops and tractors; large tractor-drawn scrapers operate



NEARLY 500,000 cu yd of rock came out of this single cut. Cuts were made unusually wide to reduce maintenance cost.

PRECISION-BLASTING avoids overbreak and leaves sides of big rock cut on a neat slope (at left). The limestone drills fast with wagon drills and throw-away drill bits.

TEAMWORK between a 3-cu yd shovel and a fleet of 24-cu yd bottom-dump wagons proves economical in moving limestone and shale.

HEAVY DUTY TIRES not only do a good job of compaction but last a long time on the earth fills (at left), but they really take a beating (at right) when operating on the rock fills.

on medium length hauls; and high-speed motorized earth-carrying scrapers take over for the longer hauls, some of which reach 2 miles. Considerable earth is also being handled by 5-cu yd draglines and bottom-dump wagons.

• **470,000 cu yd rock cut**—Several 24-cu yd bottom-dump wagons also handle rock in the biggest rock cut on the job which contains 470,000 cu yd (solid measurement). They are loaded by a power shovel with a 3-cu yd dipper.

• **Precision blasting**—Blasting the alternating layers of relatively soft shale and limestone in this big cut in Schedule III is an outstanding example of what can be done with precision blasting. By using millisecond delays and holes properly located and loaded, the contractor is working this cut to incredibly precise lines.

SOMETHING NEW in trestle construction—Special piledriving leads; pipe frame braces, and outriggers permit rubber-tired crane to erect trestle bridge.

Side-cuts are blasted so nearly accurate as to require practically no extra work to match the theoretical slope of 1 on ¼. This is how it is done:

From 400 to 600 holes are fired at one time, in four delays of zero, 50, 100 and 150 milliseconds. The firing pattern calls for all holes except three lines along the sides of the cut to be fired instantaneously. The third line from the outside of the cut has a 50-millisecond delay; the second line, a 100-millisecond delay; and the extreme outside line, a 150-millisecond delay. This controls the overbreak.

The same firing pattern is used across the width of cut at the forward end of the area being blasted, to minimize backbreak. Rock is blasted with 40% strength powder, and shale with 20% powder. Holes are fired by a 450-v circuit from a special generator. The cut is worked from end to end; an entire layer of shale being removed before starting on a layer of rock.

• **Drilling the rock**—Rock is drilled by four wagon drills mounting 2¼-, 2½- and 2-in. throw-away bits on 6-ft steel changes. Shale is drilled with 2½-in. coal augers on wagondrill frames.

Two compressors, 500-cfm and 750-cfm, furnish air for drilling. They feed into a large receiver from which a 4-in. line leads along the top of the cut to a small receiver containing a moisture trap. Four 2-in. flexible hose lines from the small receiver supply air to the wagondrills.

The shale and rock from this 470,000 cu yd cut is being used to make an adjacent fill, without the addition of fine material for binder. It is loaded by 3-cu yd shovels, hauled in 24-cu yd bottom dump trucks, spread with bulldozers and a patrol grader and pounded into a solid fill under the impact of the big trucks. The fill is being built up in 3-ft lifts.

• **Contractor ingenuity**—There is considerable evidence of ingenuity.

One contractor modified the front end of a self-loading scraper, by widening the opening, to permit easier and faster loading in some hard-to-dig clayey material.

Another had a 2½-cu yd shovel loading rock, but needed a 3-cu yd dipper to speed up production. So he cut the 2½-cu yd dipper in two, added some welded plates but no extra teeth, increasing its width 9 in. and its length about 5 in., to give it a 3-cu yd capacity.

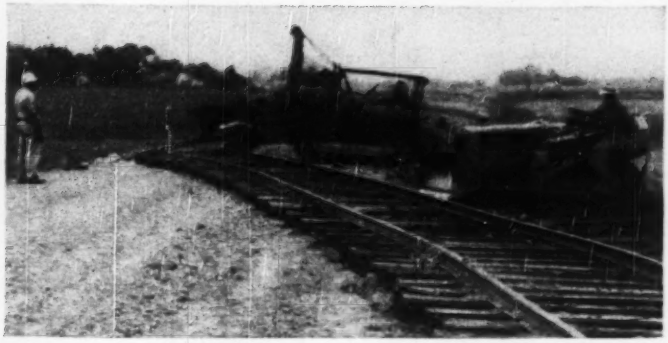
This same contractor also has equipped his field cars with radio-telephones by which he contacts his Kansas City office when ordering repair parts. And the ubiquitous skid-tower with floodlights and portable generator are spotted throughout the work to permit two-shift construction.

• **New trick in pile driving**—When it came to building some long timber trestle bridges the prime contractor on Schedule II came up with an innovation in pile-driving that some said wouldn't work. But it did, and the bridges were built much faster than would have been possible by an on-track pile-driver or other methods.

Starting at one end of these trestle bridges (the longest of them is 784 ft., containing fifty-six 14-ft spans, across Stanley Lake) the contractor drove the piling for the bents; added the cross-bracing and completed the timber decking, span-by-span from one end to the other. And he did it all from the deck of the bridge.

He had a special set of 40-ft leads made to handle piling up to 65 ft long. The leads were handled by a 6-wheel pneumatic-tired crane operating on previously erected timber deck.

The rear of the crane was snubbed to a pile bent, while special outriggers gave added safety against the crane's overturning under maximum load. These outriggers were made long



OLD TRACK is shoved over by a team of bulldozers to make way for the new high-speed line. It will be salvaged when the new line is completed.

enough so the weight of the crane was directly over the last bents driven..

A special pipe frame with hinged connection to a frame mounted on the front of the crane extended out to the leads to hold them in true position. A moonbeam on the front of the pipe frame permitted driving the piling on a batter.

Each bent is made up of 6 piles. The center two are vertical, the two outside ones are battered 2 in. per foot and the intermediate pair are battered 1-in. per foot.

A stationary boiler beneath the bridge furnished steam for the double-acting pile-hammer. Piling was delivered along the bridge site, and a snatch line from the boom lifted them into position for driving.

Shallow holes were air-augered as necessary to permit the long piles to clear the hammer at the start of driving to a 40-ton resistance.

After a 6-pile bent was driven the leads were lowered to the ground and the pipe frame pulled up and snubbed against the boom. Cross-bracing and longitudinal bracing were erected by the fully-revolving crane. Pile caps were added and a span of timber decking was completed.

Material for the deck was trucked out over the previously completed length of bridge.

• **Crane moves ahead**—When the new span had been completed, the motor crane was ready to move ahead 14 ft. It traveled on short sections of built-up plate-and-angle girders laid flat with timber shoring between the web of the girders and the timber decks.

There were three pairs of these 14-ft sections of track, bolted together. The rear pair was picked up by the crane, swung around and bolted to the front pair, and the crane was ready to move forward 14 ft. Once in position, timber wedges were driven between the outside of the tires and the inside of the flanges of the runway beams.

Outriggers were adjusted by screw jacks bearing between them and the pile caps of the forward pair of bents. The leads were picked up and positioned, the next pile bent driven.

The trestlework was so well coordinated that the contractor averaged two bents per 8-hr day.

• **Slag ballast**—Ballasting and track laying follow conventional practice. The 6-in. subballast is slag screenings; the 12-in. ballast is blast furnace slag. Ties, fastenings and rails are trucked.

The ties are handled in bundles of 24; enough to support a pair of rails. All rails are the Burlington's standard 112-lb TR (torsion-resisting) rails.

• **Contractors**—Grading contracts including some of the smaller bridges and drainage structures are:

Schedule I: 6.4 miles, $210,000, Cameron-Joyce, Keokuk, Iowa. T. T. Gammon, construction superintendent.

Schedule II: 21.8 miles, $988,000, John P. Abramson Co., Des Moines, Iowa. John P. Abramson, president; Harry Lindblom, general superintendent; Jay A. Scott, grading superintendent; W. J. Cochran, bridge superintendent; and E. J. Abramson, engineer.

Schedule III: 42.6 miles, $3,575,000. List & Clark Construction Co., Kansas City, Mo. C. E. Clark, president; J. W. Frisbie, vice president; J. M. Clark, project manager; C. E. Clark, Jr., general superintendent; O. F. Brown, assistant general manager; and J. E. Irwin, chief engineer.

Bridge contractors include Maxwell Bridge Co., Columbus, Kan., Roy Gray, construction superintendent; List & Weatherly Construction Co. and Kansas City Bridge Co., both of Kansas City, Mo.; and Vogt & Conant, Cleveland, Ohio. Perry-McGlone Construction Co., Kansas City, Mo., has a subcontract for 16 miles of grading on Schedule III. Wayne Cornett is construction superintendent.

• **Burlington engineers**—Henry A. Aalberg, assistant chief engineer, is in direct charge of the entire 71-mile project, reporting to H. R. Clarke, chief engineer. Other Chicago office personnel connected with the project include E. J. Brown, engineer of track; F. H. Cramer, bridge engineer; John Wheeler, executive assistant; G. R. Burkhardt, office engineer; and J. W. Killey, general land agent.

Field engineers on the job include: F. O. Shafer, engineer of construction, A. J. Strobel, assistant engineer of construction; N. D. Hill, F. R. Lieber and B. A. Steffarud, resident engineers; Robert Lennertz, soils engineer; D. V. Zeis, office engineer; L. R. Hall, construction roadmaster; Wm. Fox, chief inspector of bridges; and A. F. Hemmer, assistant master carpenter. Professor K. B. Woods, Purdue University, is consultant on the soils-compaction work.

BURLINGTON CUT-OFF—FACTS AND FIGURES

Total cost	$16,000,000	
Total length	71	miles
Right-of-way cost	$865,000	
Cost of structures:		
Bridges (under track)	$2,692,000	
Concrete boxes, concrete pipe, metal pipe	1,230,000	
Highway overpasses	253,000	
Total	$4,175,000	
Cost of laying ballast, ties and track (per mile)	$59,250	
Grading (Earth)	7,460,000	cu yd
Rock Excavation	750,000	cu yd
Highway grade crossings	74	
Passing tracks (each 7,800 ft long)	6	
Truss, girder and rolled beam bridges	3,900	lin ft
Concrete boxes	3,700	lin ft
Metal pipe culverts	16,000	lin ft
Concrete pipe culverts	4,700	lin ft
Timber trestle bridges	2,500	lin ft

Trials develop best way to line 3-mi sewer tunnel

IT TOOK A LONG PERIOD of trial and error before engineers settled on the best method for lining Portland, Oregon's new 3¼-mile, 96-inch sewage tunnel.

The first attempt made was a double-pumping system that worked this way:

Concrete was fed through a manhole into the hopper of one unit, which in turn pumped as much as 1,300 ft to the second unit. This latter pump placed the mix behind collapsible steel forms built to give the section its horseshoe shape.

The two pumping units were connected with 8-in. dia pipe that detached in 10-ft sections. During a pour, the unit under the manhole remained stationary and the second unit was slowly moved back as concrete filled the forms.

Then, as work progressed, one or more sections of the connecting pipe were removed between each pour—thus shortening the distance between pumping units. In this way, the second unit gradually moved to the first. The scheme was finally abandoned because plugging could not be prevented in the necessarily long stretch of pipe that connected the two units at the outset.

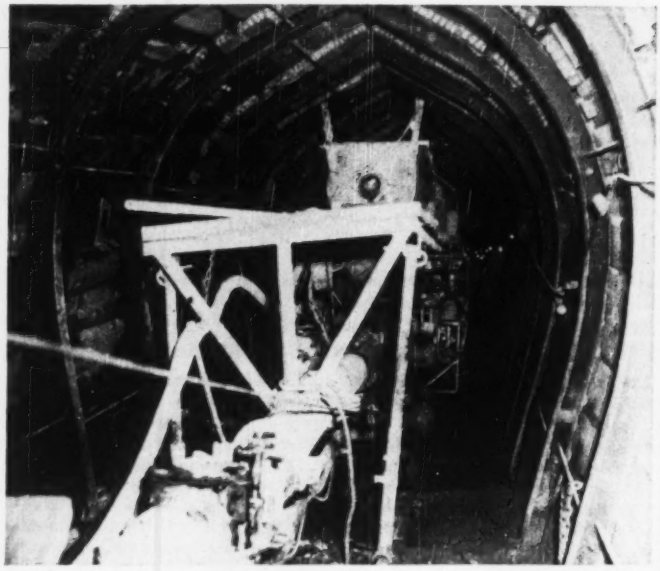
• **Present system**—The system now used involves dropping the mixed concrete down a manhole shaft into an agitator on a rail-mounted car. A small electric locomotive pulls this car to the pumping unit. Concrete is dumped on an elevating conveyor that carries it to a remix hopper on top of the pumping machine. From here it is pumped through 600 ft of pipe to the steel forms. Access manholes at about 1,000 ft intervals are a key to speed.

This procedure is employed to place a 9-in. minimum thickness of concrete in the arch of the tunnel. Pouring the invert is done later with a second pass of the same equipment. The invert between manholes is poured before the entire assembly moves to the next manhole.

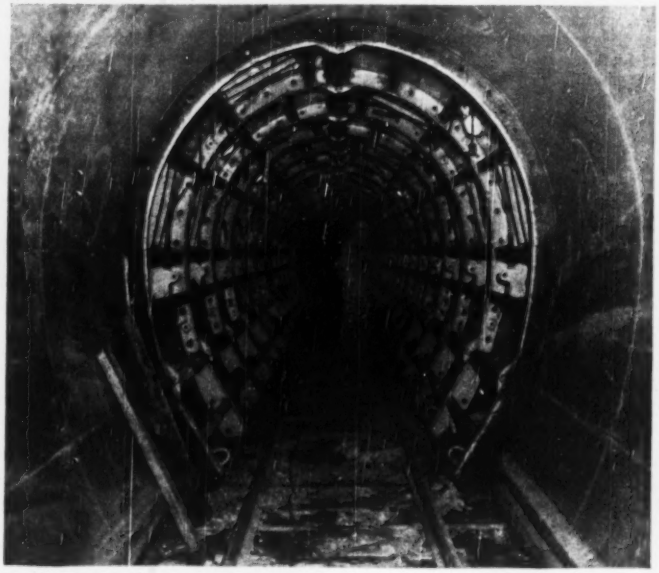
• **Part of sewerage project**—The tunnel involved is an important link in the Portland sewerage project now nearing completion. It will carry much of the city's flow across a peninsula lying between the Willamette and Columbia Rivers. This peninsula is relatively low, so manholes are installed on about 1,000-ft centers throughout the tunnel length.

Contract amount for this 3.25-mile tunnel is $2,589,133. Peter Kiewit Sons Co. was awarded the contract, including both drilling and lining the sewer tunnel.

A. M. Coker is project superintendent for the contractor. Work is being carried out for the City of Portland under a board of engineers headed by Ben S. Morrow. Dan Curran is resident engineer for the city on the tunnel job.



CONCRETE-PUMPING MACHINE places concrete behind forms for a 96-in. dia horseshoe sewer tunnel in Portland, Ore. Concrete is brought to the machine by a rail-mounted, electric-engine-drawn, agitator car.



COLLAPSIBLE STEEL FORMS result in a smooth concrete finish. Access hatches in the forms leave circular imprint on concrete. A 9-in. thickness of concrete is poured in the arch and the invert is done later.

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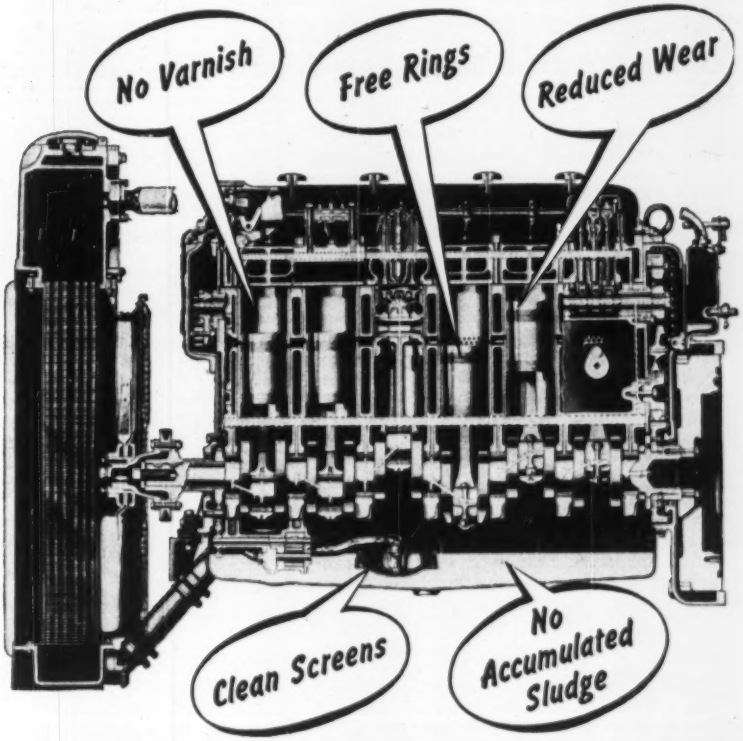

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THOMAS M. RIDDICK . . . "Withdraw the warmest water possible from the lowest strata of the reservoir."

How to prevent pipeline freezing —An Interview

THOMAS M. RIDDICK, consulting engineer and chemist, has completed an investigation for development of an industrial water supply in a cold climate. With long exposed pipelines from the source to the mill site, he was compelled to make a study of fundamental factors that govern freezing in such lines. The study resulted in a tying together of the basic laws of heat transfer and in formulation of a rational method that evaluates factors controlling freezing of water in exposed pipelines. Here's what Riddick says about this work:

Q—How much freezing is allowable in exposed pipelines?

A—No ice formation can be safely tolerated. Temperature of water discharging from a pipeline should always be maintained above 32.00 deg F. From a practical standpoint, the temperature should be kept 0.1 to 0.5 deg higher than this value as a safety factor.

Q—What's your basis for this conclusion?

A—A study of three types of ice formation with natural water (not chemically pure water). Frazil ice, which generally forms en masse at temperatures of 31.90 to 31.99 deg F; the creation of solid ice crystals, which grow progressively in size and may be formed over a wide temperature range below 32.00 deg F; and formation of individually distinct ice needles and plates of relatively large size after an unpredictable period of supercooling.

Q—Which type of freezing is most likely to occur in exposed pipelines?

A—Frazil ice formation. It normally occurs simultaneously in a large mass of water when supercooled from 0.01 to 0.10 deg F (below 32.00 deg). The size of these ice particles is from microscopic to 0.1 mm in diameter. They tend to remain uniformly dispersed throughout the mass (due to their small size) rather than to rise to the surface.

Q—How do bursting pressures build up?

A—These crystals readily attach themselves to any rough surfaces. They build up at valves, pipe couplings, bends and welded seams. Then frazil-ice crystals brought down by the flowing water enlarge these masses until the pipe line becomes clogged. This condition (slush of coarsely divided ice) may not be serious in submerged intakes but in pipes exposed to low air temperatures, it could be disastrous. The shattering stress of solid ice is about 400 psi.

Temperature of water

Q—Can freezing in exposed pipes with long detention periods be prevented or delayed?

A—Yes, there's one practical method: Withdraw "warm" water from the reservoir or like supply. This warm water is above the freezing point and has a Btu content high enough to balance off all or part of the heat losses that occur during transmission in the pipe line.

Q—Is such water available in nature?

A—Yes, stratification—due to changes in density of water with changes in temperature—causes bottom waters of deep lakes and reservoirs to approximate 39 deg F. After the freeze-over, waters in the upper layers closely approximate a temperature of 32 deg. This top zone (Epilimnion) is usually only a few feet deep during the winter.

Waters from the lower part of the thermocline or middle zone (see sketch) can be safely predicted to have a temperature of about 37 deg F, and in the bottom strata (hypolimnion) about 39 deg.

Q—Under what conditions do these values apply?

A—They apply primarily to lakes and reservoirs not subject to heavy withdrawal of water and to considerable fluctuations in water levels.

Q—What happens when a feeder stream discharges close to a gatehouse or outlets?

A—Temperature of the water will be lowered. Stratification values of 38-39 deg F should be reduced to allow for short circuiting of colder water in the area adjacent to the mouth of a stream. This can be a very important consideration in the proper location of a reservoir outlet.

Heat input and heat losses

Q—How can you determine if the water will be warm enough to prevent freezing?

A—By computing the heat balance.

Q—What's the first step?

A—Figure the heat input to the pipeline. The heat available to prevent ice formation is almost entirely due to degrees of temperature of the water above 32.00 deg F. This is expressed as Btu's per sq ft of exposed pipeline per hr as:

$$H_i = \frac{(\text{flow of water in lb per hr}) \times (\text{temp at inlet in deg F} - 32)}{\text{area of exposed pipeline in sq ft}}$$

This is equivalent to

$$H_i = \frac{1{,}325\,Q\,(T_w - 32)}{DL} \qquad (1)$$

in which H_i is Btu per sq ft per hour available from the specific heat of inlet water; Q, rate of flow in mgd; T_w, temperature of water in deg F at the pipeline inlet; L, length of pipe line in thousands of feet; and D, internal diameter of pipe in inches.

Q—Does the sun influence the heat input?

A—No, because minimum tempera-

tures generally occur at night or during cloudy weather.

Q—Is there any other credit that would add to heat available for preventing ice formation?

A—Yes, the frictional heat generated by passage of water through the pipeline. It's expressed this way:

$$H_f = \frac{\text{(flow of water in lb per hr)} \times \text{(total friction loss in pipe in ft)} \times 0.0154}{\pi D1}$$

This formula reduces to

$$H_f = \frac{1.70 \times Q \times f}{D} \qquad (2)$$

in which H_f is Btu per sq ft of pipe per hr generated by frictional energy; f, the friction loss per 1,000 ft of pipe; and D, diameter of pipe in inches.

Q—When would it be worthwhile to compute heat gained by friction?

A—The heat generated can be quite appreciable for relatively small-diameter lines operating at high velocities. It would be negligible for large pipes with low velocity.

Q—Do you have any evidence that water friction prevents freezing?

A—Yes, in a 20-in. exposed pipe, operating at 15-fps velocity, frictional energy was responsible for lack of freezing. The water at times entered the line at a temperature of 32.00 deg F and it contained frazil ice. The frazil ice actually melted during passage of the water through the pipe.

Q—Let's summarize. What's the total heat input?

A—It's equal to the sum of H_f and H_z. This represents the total heat expendible in any pipeline to prevent ice formation.

Heat lost several ways

Q—So much for the heat input. How is heat lost from the pipeline?

A—It's lost through the water film, the pipe wall, and by radiation and convection (from the external walls to the air).

Q—How do you calculate the heat transmitted through the thin, slow-moving film of water located around the internal circumference of the pipe wall?

A—A simplified equation for this loss that applies to water with near-freezing temperature is

$$h_f = \frac{202\ V^{0.8}}{D^{0.2}} \qquad (3)$$

in which h_f is Btu per sq ft per hr per deg F differential transmitted from the bulk of the water at a temperature of 32 deg F through the film at the pipe wall; v, the average velocity of water in the pipeline in fps; D, the diameter of pipe in inches. This formula is given by W. H. McAdams in his book, "Heat Transmission" (McGraw-Hill Publishing Co., New York, N. Y.).

Q—This loss can be very high, then?

A—The transfer of heat through the water film is extremely high—even with large diameter pipe at low velocities. It increases greatly with small pipe at high velocities. In other words, film resistance to flow of heat is practically negligible.

Q—How about conductivity of the pipe material?

A—The rate of heat transfer through this barrier depends on specific conductivity of pipe material, thickness of the pipe wall and the temperature differential between the inside and outside walls of the pipe. It's expressed by Fourier's law:

$$q = \frac{k\,\Delta t}{L} \qquad (4)$$

in which q is Btu transmitted by conduction through the pipe wall per sq ft of pipe surface per hr; k, thermal conductivity in Btu per sq ft per hr per deg F per inch thickness of pipe wall; Δt, the temperature differential in deg F (32 minus air temperature for freezing conditions); and L, thickness of pipe wall in inches.

Q—What's the rate of heat transmission by conduction?

A—Per deg F differential through a pipe wall, it's k/L. The corresponding factor for insulating materials, if employed, is k'/L'. Values of heat transfer by conduction for pipeline materials are given in Table I.

Radiation and convection

Q—The other means of liberating heat (from the external pipe walls to the air) are radiation and convection. How do you define them?

A—Radiation is the transmission of energy by heat waves from the surface of one body to another.

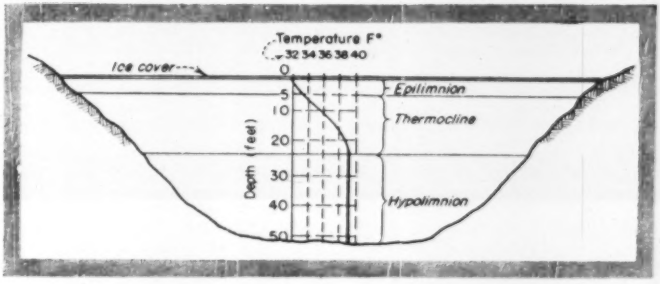
Convection is the transmission of heat within a fluid (such as air or water). Under normal conditions it is caused by changes in density of the receiving fluid.

Q—How are these losses computed?

A—They are best determined by empirical formulas.

Q—How do you determine the radiation loss?

A—The fundamental law of radiation



WATER TEMPERATURE in winter is about 7 deg above freezing below the 24-ft depth in ice-covered reservoirs and lakes.

TABLE I—HEAT TRANSFER BY CONDUCTION

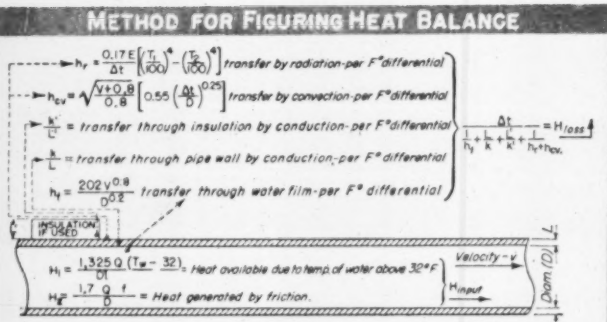
For typical pipeline materials and pipeline insulation

Pipe Materials	k*	Assumed thickness in inches	Btu/sq ft/hr/deg F transmissible through material
Steel	420	0.25	1,240
Cast Iron	385	0.75	515
Concrete	5.3	5.0	1.1
Wood Stave	1.0	2.0	0.5
Aluminum	1,410	0.25	5,640
Asbestos Cement	4.5	1.0	4.5
Insulators			
Dry Air	0.17	2	0.08
Water	4.0	2	2.0
Ice	15.6	2	7.8
85% Magnesia	0.4	2	0.2
"Foamglas"	0.4	2	0.2

*Btu per sq ft per hour per deg F differential per inch thickness of material.

(Values from International Critical Table and other sources).

METHOD FOR FIGURING HEAT BALANCE


$h_r = \frac{0.17E}{\Delta t}\left[\left(\frac{T_1}{100}\right)^4 - \left(\frac{T_2}{100}\right)^4\right]$ transfer by radiation-per F° differential
$h_{cv} = \sqrt{\frac{V+0.8}{0.8}}\left[0.55\left(\frac{\Delta t}{D}\right)^{0.25}\right]$ transfer by convection-per F° differential
$\frac{k'}{L'}$ = transfer through insulation by conduction-per F° differential
$\frac{k}{L}$ = transfer through pipe wall by conduction-per F° differential
$h_f = \frac{202\,v^{0.8}}{D^{0.2}}$ transfer through water film-per F° differential
$\frac{\Delta t}{\frac{1}{h_f}+\frac{L}{k}+\frac{L'}{k'}+\frac{1}{h_r+h_{cv}}} = H_{loss}$
INSULATION IF USED
$H_i = \frac{1,325\,Q\,(T_w - 32)}{D^1}$ = Heat available due to temp. of water above 32° F
$H_f = \frac{1.7\,Q\,f}{D}$ = Heat generated by friction.
Velocity - v
H_{input}
T_1
T_2
D (or Diam.)
L
L'

LEGEND

PIPE LINE

Q = Rate of flow in million gallons per day
D = Diameter in inches (I.D. for thin walls, average diam. for thick walls)
v = Velocity in feet per sec.
C = Frictional coefficient (in Williams-Hazen Formula)
f = Friction loss per thousand feet, (from W-H Formula)
L = Length in thousand feet
L(L') = Thickness of pipe wall (insulation) in inches.
k(k') = Thermal conductivity coefficient of pipe wall (insulation) in terms of $\frac{B\,t\,u}{Hr.\ Sq.\ ft.\ F°/in}$
E = Emissivity of pipe wall (or insulation)

CLIMATOLOGICAL

Tw = Temp. of water at pipe inlet in F°
T_1 = Freezing temp. of water in F° absolute = 492
T_2 = Air temp. in F° absolute = 460 + air temperature F°
$\Delta t = T_1 - T_2$ = Temperature differential between air and water in F°
V = Wind velocity in miles per hr.

COMPUTATION SHEET

THE PROBLEM

Q = 25 *mgd*; T_{water} = 35° F; D = 48";
T_{air} = −5° F; v = 3.1 *fps*; f = 0.60 ft/1,000 (C = 130);
L = 16.8; Δt = 37° F; V = 35 *mph*
(v = *Velocity of flow in pipe*)

Pipe materials considered — Steel, wood stove, concrete and aluminum

1. Heat input in all cases:

(Eq. 9) $H_{input} = \frac{25}{48}\left[\frac{1,325\,(35-32)}{16.8} + (1.7)(0.6)\right] = 124$ *Btu/sq ft/hr*

2. Heat-loss coefficients for film resistance and convection from thin-walled metals are independent of pipe materials. They are common for all cases:

(Eqs. 3 & 10) $\frac{1}{h_f} = \frac{1}{\frac{202\,(3.1)^{0.8}}{(48)^{0.2}}} = 0.0044$

(Eq. 8) $h_{cv} = h_c\sqrt{\frac{35+0.8}{0.8}} = 6.6\,h_c = 6.6 \times 0.55\left(\frac{37}{48}\right)^{0.25} = 3.4$

3. Conduction and radiation for $\frac{1}{4}$" steel pipe where

$k = 420$ and $E = 0.7$
$\frac{L}{k} = \frac{0.25}{420} = 0.0006$

(Eq. 6) $h_r = 0.7 \times 0.77 = 0.5$

4. Radiation and convection losses are combined:

$h_{cv} + h_r = 3.4 + 0.5 = 3.9$
$\frac{1}{h_{cv}+h_r} = \frac{1}{3.9} = 0.26$

5. Combined overall heat losses (steel pipe)

(Eq. 10) $H_{loss} = \frac{37}{0.0044 + 0.0006 + 0.26} = 142$ *Btu/Sq ft/hr*

6. Heat loss for 5" concrete pipe:

$k = 5.3$; $\frac{L}{k} = \frac{5}{5.3} = 0.95$

Assume combined convection and radiation losses are the same as for steel pipe.

(Eq. 10) $H_{loss} = \frac{37}{0.0044 + 0.95 + 0.26} = 30$ *Btu/sq ft/hr*

7. Heat-loss for 2" wood-stove pipe:

$k = 1.0$; $\frac{L}{k} = \frac{2}{1} = 2$

(Eq. 10) $H_{loss} = \frac{37}{0.0044 + 2.0 + 0.26} = 16$ *Btu/sq ft/hr*

LOWEST unit heat-loss occurs with wood-stove pipe used along an exposed site.

is expressed by the Stefan-Boltzmann equation:

$$H_r = 0.17\,E\left[\left(\frac{T_1}{100}\right)^4 - \left(\frac{T_2}{100}\right)^4\right] \quad (5)$$

in which H_r is Btu per sq ft of radiating surface per hr; E, emissivity coefficient, ranging from 0 (complete reflection) to 1 (complete absorption); and T_1 and T_2, absolute temperatures in deg F of the radiating bodies. (Abs. temp. equals 460 plus deg F).

Q—Can this be expressed on a unit-temperature differential basis?

A—Yes, if design temperatures are known and the full temperature differential obtains. When T_1 is 492 deg for water at freezing and T_2 is 455 deg for air (5 deg below freezing):

$$\frac{H_r}{\Delta t} = h_r$$

$$= 0.17\,E\,\frac{\left[\left(\frac{492}{100}\right)^4 - \left(\frac{455}{100}\right)^4\right]}{37} \quad (6)$$

$$= 0.77\,E \text{ Btu per sq ft per hr per deg F differential.}$$

The values of E are given in Table II.

Q—And convection losses?

A—They are a function of the temperature differential and the pipeline size. McAdams gives a simplified equation applying to horizontal pipe in still air:

$$h_c = 0.55\left(\frac{\Delta t}{D}\right)^{0.25} \quad (7)$$

in which h_c is Btu transmitted by convection per sq ft per hr per deg F differential; Δt, temperature differential between outside pipe wall and air; and D, diameter of pipeline in inches.

Q—These are minimum losses, aren't they?

Moving air increases loss

A—Yes, convection losses increase appreciably with wind velocity. Langmuir (Mechanical Engineering, vol. 49, no. 8, p. 898, 1927) gives a formula for this relation:

$$h_{cv} = h_c\sqrt{\frac{V+0.8}{0.8}} \quad (8)$$

in which h_{cv} is convection loss corrected for wind velocity; and V, wind velocity in mph.

Q—Now, can all these equations be brought together?

A—Yes. The heat available to prevent freezing is:

$$H_{input} = \frac{Q}{D}\left[\frac{1,325\,(T_w - 32)}{1} + 1.7\,f\right] \quad (9)$$

The heat losses are:

$$H_{Loss} = \frac{\Delta t}{\frac{1}{h_f} + \frac{L}{k} + \frac{L'}{k'} + \frac{1}{h_r + h_{cv}}} \quad (10)$$

in which L'/k' is resistance of insulating material, if used, of thickness L' and thermal conductivity coefficient k'. Convection and radiation, it should be noted, are expressed as a joint unit in series with the other resistances.

Q—Then—to prevent freezing—heat input must exceed heat loss for the pipeline's entire length?

A—That's right. And a reasonable factor of safety is highly desirable.

Computation for use

Q—Do you have an example to show how your method is applied to an actual problem?

A—Let's take a look at the computation sheet. These figures apply to the industrial water-supply development that I recently investigated.

Q—Steps 1-5 indicate that there'd be no safety factor against freezing in a steel pipeline. Is that correct?

A—True enough. The Btu's available amount to 124 per sq ft hr against heat losses of 142. And because the steel pipeline would have 15 mgd for the first few years of service, available Btu would be about 15/25 of 124 or 75 Btu per sq ft per hr.

Q—If concrete pipe were used?

A—Step 6 shows that the heat loss would be much less than the heat input both for 25 and 15 mgd flows. Concrete pipe, therefore, provides a good safety factor.

Q—Wood-stave pipe is often employed for conveying water in cold climates. What is its rating for preventing freezing?

A—It has a good rating. Take a look at step 7 on the computation sheet. It's loss is about half of that for concrete pipe. As a matter of fact, the widespread utilization of wood-stave pipe for exposed lines in cold climates is probably responsible for the absence of operating difficulties due to freezing.

Freeze-ups can come fast

Q—Aren't actual cold weather air temperatures along the pipeline route very important?

A—Right. Monthly and daily minimums should preferably be known for a period of years to permit computation of heat losses for the worst condition.

Q—Just how long does it take to freeze a pipeline?

A—A water-temperature drop of 1 deg (from 33 to 32 deg F) can occur in about 30 min in a 48-in. steel pipe flowing at 25 mgd. Supercooling to 31.90 deg with the danger of frazil ice formation can then take place in three minutes. This means that a one-day period is ample to produce hazardous conditions if heat losses greatly exceed heat input.

TABLE II—FACTORS OF EMISSIVITY

For computing radiation from the various pipe materials at temperature of about 32 F

Material	E
Asphaltic Paint—Black	0.9
White Enamel	0.9
Aluminum Paint	0.4
Cast Iron	0.7
Wood Dressed	0.9
Asbestos Cement	0.9
Aluminum	0.1
Brass or Copper (with patina)	0.5

Q—Well water is usually warmer than reservoir supplies. Wouldn't its use prevent freezing?

A—The temperature of well water in northern U. S. is about 50 deg F. This high value should furnish enough heat to prevent freezing even at very low air temperatures.

Q—Let's sum up all that you've said. First, how can freezing be prevented?

A—There are four methods: Withdraw the warmest water possible from the lowest strata of a reservoir; provide a high velocity in the pipeline (a short detention period); blow off water to waste at the end of the line to decrease the detention period; and check heat losses by insulation. Wasting water may be inadvisable except under emergency conditions, particularly if water is treated before transmission.

Q—Is it feasible to insulate a long pipeline?

A—Use of wood or a highly porous glass for insulation seems economically feasible. If the pipe could be inclosed to provide a dead air space around it, then freezing is practically impossible even under the most severe conditions.

Aluminum louvers for south light

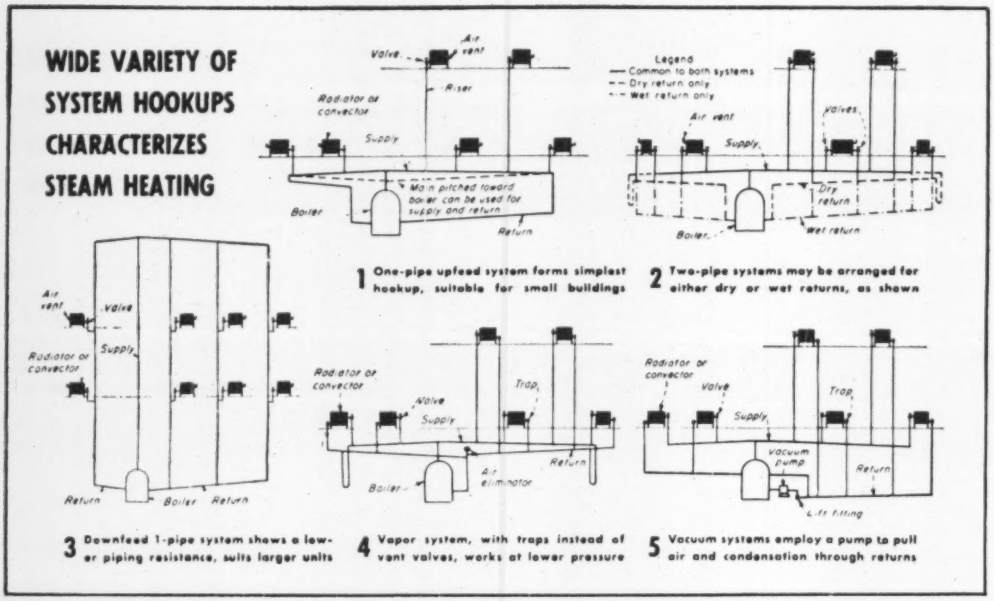
In recent years school designers have insisted on a north exposure for classrooms as providing best light. However, a Fairfax, Calif., school reverses this trend by orienting for south light and using aluminum louvers to capture warmth and color.

The louvers are banded across the upper portion of the window areas with the lower portion of the room in a deep entryway. The aluminum strips are 9¼ in. wide, spaced 7½ in. apart vertically and set at a 45-deg. angle to give maximum protection from all direct sunlight.

High reflectivity of the material provides maximum utilization of natural light and reduces costs of necessary artificial lighting. A check on light intensities in the classroom indicates more than 200 ft-candles at points 4 ft from the south wall and 175 ft-candles 4 ft from the north wall. Painting and maintenance costs are reduced by the rust-resistant property of the aluminum. Artificial lighting is incandescent.

The school involved was designed by Bamberger & Reid, San Francisco architect-engineers.

ON THE INSIDE, even light distribution with no glare is obtained with louvers.



Heating systems for large buildings

J. C. McCabe
Associate Editor, POWER
New York, N. Y.

THE IMPORTANCE of deciding early in the planning stages on the type of heating system for a new building can hardly be overemphasized. The equipment imposes loads on floors, beams and columns. Boilers, chimneys, pipes and ductwork require both support and space. And the location of these elements may often determine how well the building serves its vital functions.

For example, the boilers for the new office building of the First National Bank and Trust Co., Tulsa, Okla., were installed on the 20th floor (ENR Oct. 26, p. 42). This gave the bank valuable space for other use in the basement and sub-basement.

Another example is the fully air-conditioned Sinclair Oil Building, now under construction in New York City. It will be heated with steam purchased from a central heating station; the refrigeration equipment will be placed in a penthouse. Thus, the basement is freed for commercial rental as are the interconnected basements of adjacent buildings in Radio City.

• How systems are chosen—The function of the building determines, to a very large extent, the type of heating system. For example, a manufacturing plant with a long, single-roofed production zone and a large central floor area far removed from building walls presents such definite heating requirements that some form of warm-air heating system is almost mandatory. But air conditioning generally is the choice for office or store buildings; steam is popular for apartment houses; and radiant heating is the trend for small homes—and large airplane hangars.

Radiant heating, incidentally, requires close cooperation between architects and heating engineers. If the system is to be placed in the ceiling, the effect of this location on lighting, fire sprinklers or acoustic materials should be investigated early in the planning stage. Similarly, if it is to go in the floor, the types of floor and floor finish to use require study to determine most suitable combinations.

In providing space for any heating equipment, however, building designers should allow ample overhead room for pipes or ducts. They should also make certain that enough outside air can get into the boiler room to permit efficient operation of the equipment.

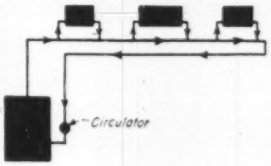
BUILDING DESIGNERS' LIBRARY

• Types of systems—Heating mediums in general use are steam, hot water and air. Steam and hot water nearly always are generated at a central point and distributed through pipes to heat-transfer surfaces in the spaces to be heated. Warm air gets its heat from furnaces or from steam or hot-water coils. Generally moved through ducts, the air may be circulated by natural means or under pressure produced by fans.

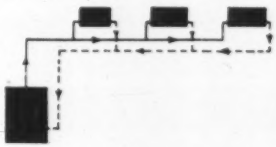
Systems in which steam or hot water is piped to local heating surfaces equipped with fans (unit heaters) display the same positive air-circulation characteristics as warm air. So, usually, these systems are considered as a warm-air type.

• Steam systems—Each basic system has certain advantages. For example, in a steam system, a boiler raises water to 212 F for an atmospheric-pressure installation—and to higher temperatures for a high-pressure system—to develop steam; then the steam is condensed in a heat-transfer element, such as a radiator or convector. Thus, steam gives up a large amount of heat per pound circulated. Its chief advantage over hot-water systems is that only a little need be circulated (1/50 by weight, or 1/30 by volume), and its main advantage over central warm-air heating is that it is distributed in

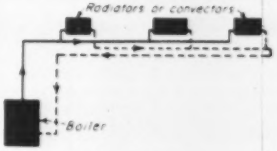
HOT-WATER HEATING MAY BE APPLIED IN SEVERAL WAYS TO SUIT CONDITIONS



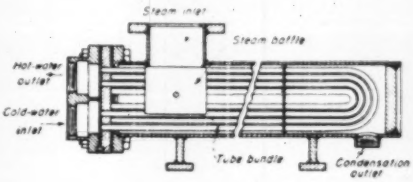
6 One-pipe systems today almost always use small pump for forced circulation



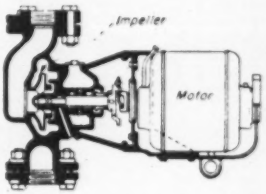
7 Basic 2-pipe system adds a separate return connection to the 1-pipe plan



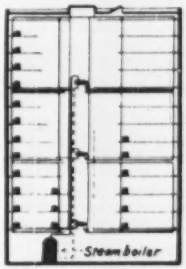
8 Reversing returns equalizes length of circuits and hence piping resistances



9 Converter takes steam from mains, generates hot water



10 Typical pump employed in a forced-circulation system



11 Hot-water system zoned vertically in a tall building

small-diameter pipes, compared with the large ducts required for air.

Further, steam develops high temperatures in its heat equipment and allows high heat-transfer rates, so heating surfaces can be small. The steam pressure assures positive circulation without pumps. And steam systems are flexible in operation and relatively cheap to install.

Fig 1 shows the simplest of all steam systems—the one-pipe upfeed. Steam enters the heating element and condensate leaves it by a single pipe connection. With such an arrangement, the supply can't be throttled.

If the supply main (dotted line), pitches toward the boiler, it also serves as a return, with condensate and steam flowing in opposite directions. However, a separate return (full line) for bringing back the condensate reduces interference between steam and condensate. When the mains run above boiler-water line, it is called a "dry" return; when below, a "wet" return.

If the building is four stories or more, a preferred one-pipe system features downfeed or overhead distribution (Fig 3). With this piping arrangement, smaller piping can be used. Even though steam and condensate flow in the same pipe, they move in the same direction and that cuts down resistance.

In most larger buildings, where steam risers run a considerable distance, piping resistance losses become an important consideration. For these structures, the two-pipe system (Fig 2) may be more efficient. The separate flow of steam and condensate permits large quantities to be handled without too large a pipe size.

The system requires two connections at each radiator with a valve in each. Supply valves can be throttled—a considerable advantage over the one-pipe system.

• Answers to problems—The major objection to steam heating systems has been lack of sensitive control. But the latest systems (Fig 4 and 5) have gone a long way toward removing that objection.

The vapor system (Fig 4) has a thermostatic trap on the radiator or convector that helps get the air out. Air also is removed at central points in the system by air eliminators, usually float-and-thermostatic traps. The result is a quick-heating system that can be operated at relatively low pressures. With a thermostatically controlled device to throttle the supply valve, heat output from the heat-transfer element can be controlled within fairly close limits.

The second of the current answers to better control of steam heat is the vacuum system (Fig 5). All return risers connect to a common main that slopes downward toward a vacuum pump, which pulls air and condensation through these lines. At the pump, air is expelled from the system and the water sped back to the boiler. (Supply and return sides cannot be connected except through a trap.)

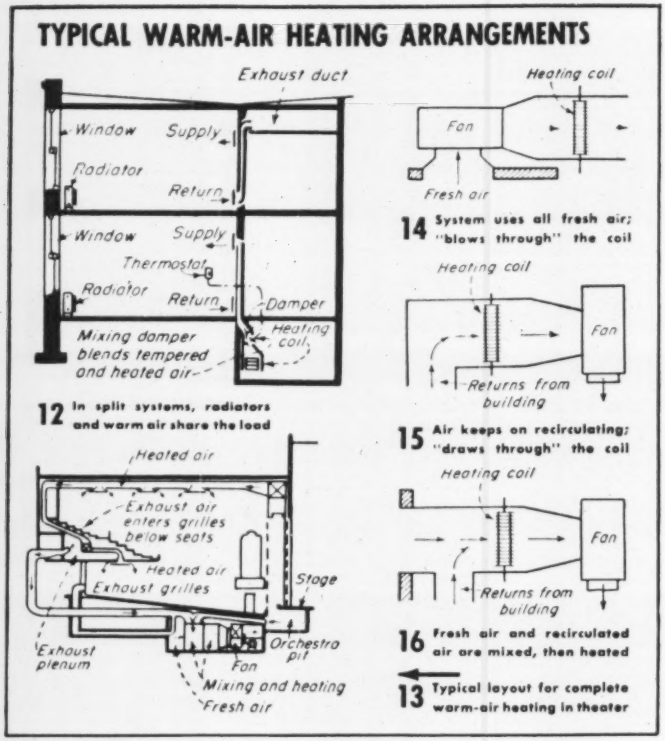
Establishment of a vacuum on the return side gives a large pressure differential across all heating elements. Hence, when the heat-control thermostat calls for the steam, the system fills up quickly.

Subatmospheric systems differ from vacuum systems in that steam-supply pressure may be controlled to produce a vacuum in the radiator on both the supply and return sides, instead of just the return side. Under such conditions, a small pressure change creates a substantial steam-temperature change. The vacuum pump can be controlled to hold a constant pressure differential between supply and return sides. Only during extremely cold weather does steam pressure reach atmospheric pressure or higher.

• Hot-water systems—Chief advantage of hot-water heating systems is ease of control. The heating medium goes through its cycle in only one phase—the liquid—not both vapor and liquid, as with steam heating. Varying the quantity of water or its temperature gives close control.

Gravity or natural circulation systems for hot water are used only in the small-home field. Larger buildings require pumps. But pumps have several advantages: With higher pressures, water temperatures can be higher and pipe sizes smaller. With higher temperatures, heat-transfer elements can be smaller. Such systems have been designed for maximum water temperatures up to 240 F, but 180 F is more common.

Fig 6 shows a one-pipe hot-water system. Each radiator has a supply



and return connection with separate risers. Both connect to one main, which makes a loop back to the heat service (boiler or converter). Special fittings, connecting risers to main, direct a portion of water flow through the radiator. Successive radiators receive slightly cooler water because of mixing of part of the returns from preceding radiators with supply water.

With the addition of a separate return connection to the system, a two-pipe arrangement can be had. Connecting this separate return as shown in Fig 8 gives a direction of flow in the return opposite to that of supply. This equalizes length of circuits and flow resistance.

• **Warm-air systems**—Wherever ventilation is needed, such as in a sealed laboratory area, forced warm-air heating is most advantageous. In other cases, by proper selection of heat-transfer equipment and distribution outlets for sections of buildings where wall area is at a premium, or in great stretches of completely open floor areas, the forced warm-air system offers positive air circulation and uniform heating, which cannot otherwise be obtained economically.

If ventilation is the prime need, all air may be taken from outside, heated to the desired temperature, discharged in the building, and then withdrawn and wasted to atmosphere (Fig. 14). Where ventilation needs are not so strict, part of the air may be returned through exhaust ducts, mixed with fresh air and then heated (Fig 16). Should infiltration supply all required fresh air, then heated air can be used over and over again (Fig 15).

Air heat can be controlled fairly readily by regulating fan speed or damper position, or by intermittent operation, depending on the heat-transfer equipment selected. Dampers and adjustable (outlet) grilles regulate heat supply to individual spaces. The systems can also be zoned to match different load requirements in different sections of a large building.

It is relatively easy during the early planning stages to provide for filtering, humidifying or otherwise treating the air. Warm-air heating forms a natural complement to summer air conditioning, and also should be planned early.

• **Heat-transfer elements**—The various elements for effecting heat transfer differ according to the heating medium used. The currently popular panel, or radiant-heating, system is merely one way of improving heat transfer from a medium—usually hot water, but sometimes warm air—to the building space. Heating elements will be discussed in a subsequent article.

Truss bridge built of aluminum

A 3-span continuous truss bridge of aluminum has been built over the River Tummel in Scotland.

As reported in THE ENGINEER (London), Oct. 13, p 368, the bridge totals 310 ft 6 in. in length, including a 172½-ft center span. Designed for a live load of 84 psf, it carries pedestrian traffic only.

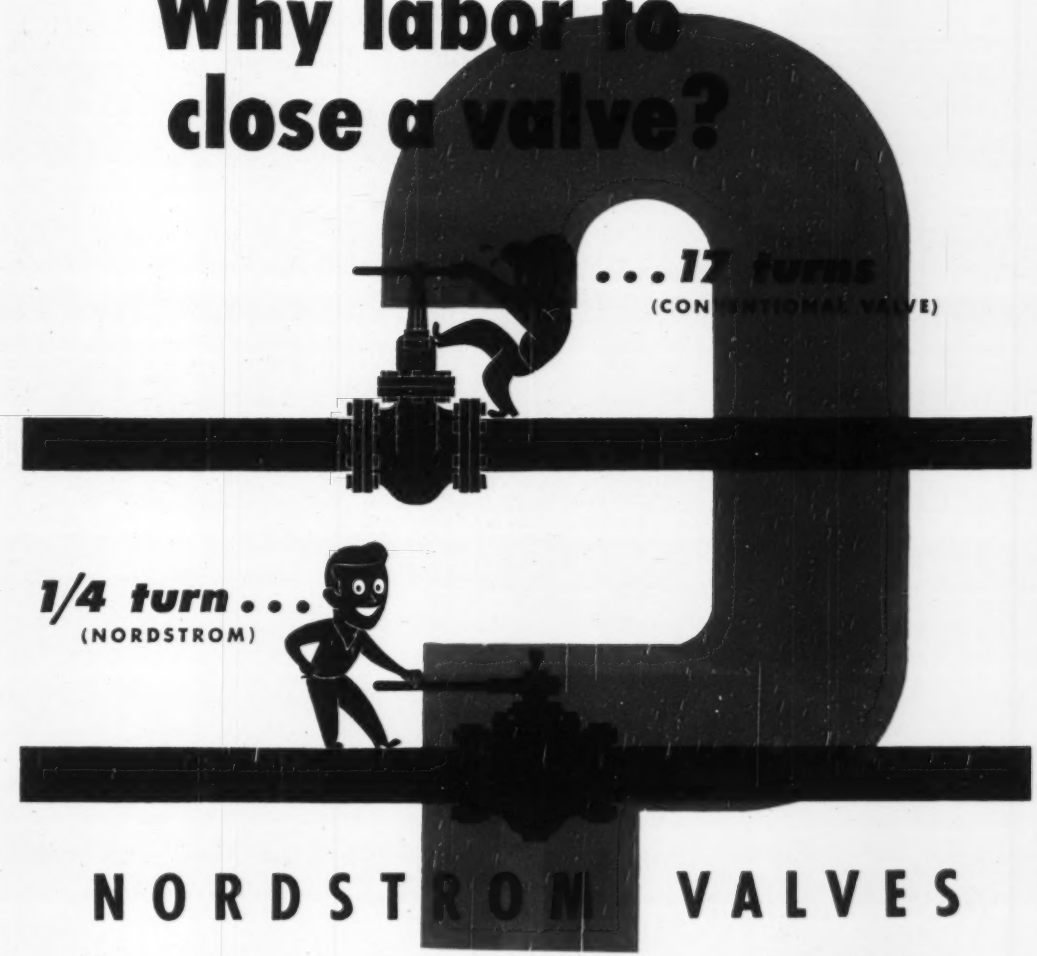
The walk, which is made of aluminum sheet surfaced with asphalt, is supported by two Pratt trusses spaced 7 ft 7 in. c. to c. It follows the camber of the upper chord but is 3 ft 9 in. below the top of this member. The lower chord of the truss is curved.

Truss panels are 8 ft 7½ in. long. Members are connected with aluminum rivets driven cold pneumatically. As a result of driving tests made prior to erection of the bridge, heads of the rivets were modified from standard. For ¾-in. dia rivets, heads were made ⅛ in. less than standard height (this led to a considerable saving in driving time). For ⅞-in. dia rivets, which work hardened before proper standard heads could be formed, a modified head 1 in. in diameter and ⅜ in. high—⅛ in. less than standard height—was used. Tests also showed better results for pneumatic driving than for hydraulic.

A different driving technique also was developed for the ⅞-in. rivets. At first, riveters used a flat tool in line with a rivet to compress it and fill the hole. Then, they rolled the tool until the head was nearly formed. Finally, they applied a set with a ¼-in. deep recess, rolling it slightly to finish the head. Once driving was started, it was necessary to finish it completely right away.

The bridge was built for the North of Scotland Hydroelectric Board as one of the ancillary works of the Tummel-Garry hydroelectric project. Sir Alexander Gibb and Partners were consulting engineers and P. and W. McLellan, Ltd., of Glasgow, were the contractors.

Why labor to close a valve?



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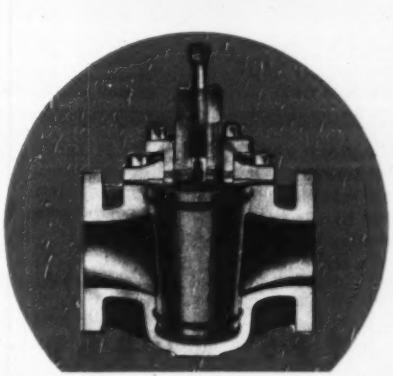

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Digester cover has center support

FLOATING COVERS for sludge digesters at the new Portland, Ore., sewage treatment plant are of a new design that, the engineers believe, have several advantages. Purpose of the design was to "open up" the bidding to all fabricators rather than include specifications that would have the effect of restricting the bidders.

• **Current practice discarded**—Main difference between the new design and existing designs is that in its down (empty) position, the cover is supported by four concrete piers at the center. Usual practice is to span the complete diameter of the digester to minimize interference with digester operation. This results in relatively heavy truss work supporting the cover structure.

The new design, utilizing piers in the center, largely eliminates this great weight of metal cover support.

• **Other advantages appear**—Designers of the Portland digesters decided that piers in the central part of the units would have no bad effect on operation. They also concluded that central support, in addition to reducing size of the members, would provide construction economies.

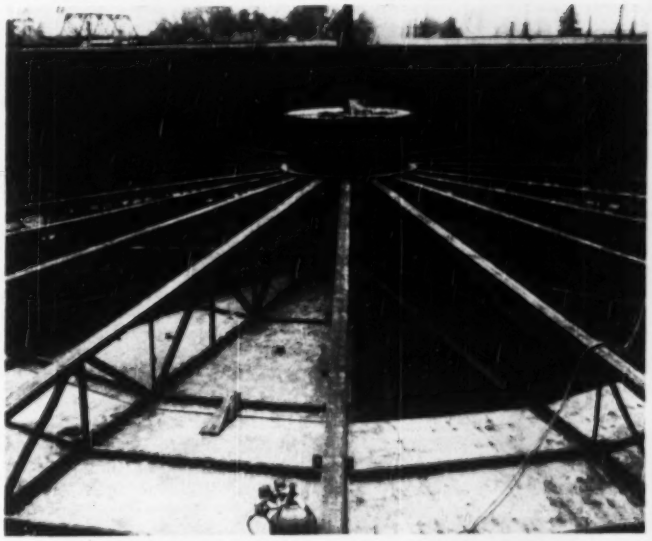
When work actually got under way they also found their expectations correct as to advantages from a construction standpoint. With the central support, erection is much simplified for the fabricator. Bid results verified the engineers' contention that the job would attract more bidders: five bids were received. The lowest for $89,613 came from Consolidated Western Steel Corp., Maywood, Calif.

• **Contract arrangements**—The work involves three floating covers for 90-ft dia sludge digesters and one gasholder-type floating cover of like diameter. Bids received were for furnishing and erecting the steel portions of the covers.

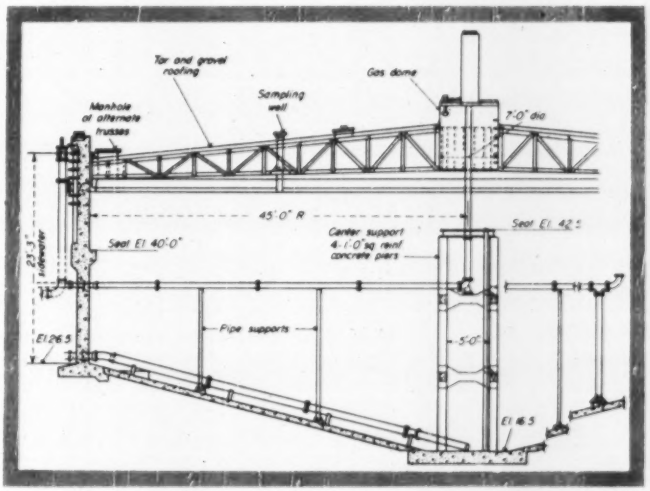
Wooden roof and the tar and gravel roofing material are covered in separate contracts.

Included in each unit are 18 trusses projecting radially from a central core that includes a 7-ft dia gas dome. To make the assembly buoyant so it will float on top of the sludge, the bottom chords are faced with ¼-in. thick steel plate.

The digesters are constructed about half underground. The portion above ground is insulated with lightweight concrete-block laid up to leave a 2-in. air space between concrete wall and insulation.



CONCRETE PIERS, visible just to the right of the middle truss, provide center support for this partly completed sludge digester floating cover. Such additional support decreases size of members and simplifies erection.



STEEL PLATE, ¼ IN. THICK, is suspended from the bottom chords of the floating units and wooden roof covers the top. Piping and stanchions are for sludge drawoff. The central reinforced-concrete pier carries a large portion of the weight of the floating cover in lowest position.

This work is part of the Portland sewerage project under the direction of an engineering board consisting of Ben S. Morrow, John W. Cunningham and J. C. Stevens. Morrow is city engineer of Portland. Cunningham heads up John W. Cunningham & Assoc. Stevens is senior partner of Stevens & Koon. Both of these firms have their headquarters situated in Portland.

Initial operation of the new sewage plant is expected to take place not later than Jan. 1, 1951.

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READER COMMENT

Deformed Bar History

Sir: Your stirring editorial of July 13 (page 21) listed 7 individuals and 10 organizations that cooperated in the "Questioning and studies begun a decade ago" that culminated in the ASTM specification for deformed bars. You paid this tribute to American technology:

> "How this all came about forms fine testimony in support of the thesis that American technology is alive to improvements—and has the setup to put them on a sound basis quickly".

Let us see how alive they were and how quickly improvements were put on a sound basis. Anyone who, during the past 37 years, spent a half hour browsing in the literature of bond between concrete and steel, could hardly miss Bulletin 71 of University of Illinois Engineering Experiment Station. Tests were made in 1909 on 7 commercial deformed bars and a special bar. In addition to the bond tests, Bulletin 71 gave a 4-page discussion: "42. Elements of Bond Resistance of Deformed Bars". After tabulating heights and spacings of projections on the most efficient bars, and considering bond, bearing and shearing stresses, this conclusion was stated:

> "A bar with projections extending around the circumference, practically perpendicular to the axis and having a height of, say, 1/10 of the diameter of the bar and spaced, say ½ of the diameter apart, would answer the requirements mentioned above".

It is significant that this description conforms to all requirements for height and spacing as set forth in ASTM specifications.

For the 3 largest sizes of round deformed bars ASTM requires a projection-height ratio of 0.05 or more. To avoid violating that requirement, and to meet practical problems of rolling-mill operation, the manufacturer would be compelled to use a ratio of 0.07 or more. Compare with 0.10 in Bulletin 71.

For all round deformed bars ASTM requires a "maximum average" spacing of 0.7 diameters. The manufacturer would select 0.6 or less. Compare 0.5 in Bulletin 71.

It is notable that the Bulletin 71 "specification" not only meets every requirement of the 1950 model sponsored by ASTM, but it represents a much better bar than that agreed on by the manufacturers. The record shows that for 33 years bar manufacturers were "asleep at the switch", and only lately have gone to great bother and some expense to solve a problem that was solved for them 41 years ago.

Cannot American technology evolve a more suitable term than "deformed bar"? Too bad that 70 years of development and research should come up with nothing better than a deformity.

DUFF A. ABRAMS
Consulting Engineer
New York, N. Y.

EDITORS NOTE: The point of the editorial was that, once the manufacturers decided they were interested in deformed bars, the technical societies and trade associations were able to make suitable specifications a reality in a relatively short time.

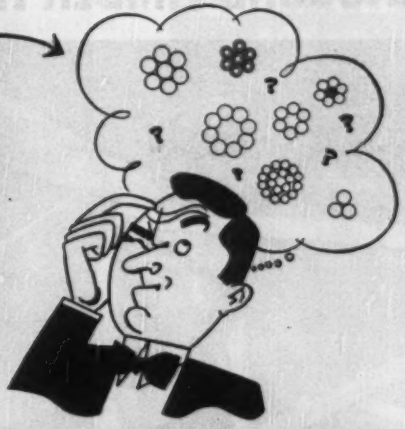
Steel Conservation

Sir: The conditions described in your editorial "Steel Conservation Coming" (ENR Oct. 12, p. 23) should not mean the postponement of the construction of necessary structures. There are welded bridge types in the medium span range which contain up to 40% less steel than the average design nowadays. In long span work, savings of over 20% of the metal contained in recent designs can be achieved by proper layouts and details. This percentage can be improved upon considerably by skillful utilization of advanced ideas in design. There are also numerous examples for complex concrete structures containing no steel, or only an insignificant amount.

The mad squandering of the nation's assets during War II resulted from the unjust practices in awarding work. Washington, instead of making an "official appeal" for steel saving designs, should give work to engineers who can furnish satisfactory solutions for the necessary structures from the available amounts of materials. Actual examples are the reasonable and efficient means for effecting progress. Appeals are of no avail, and emergency regulations that only reduce structural quality are not an expert solution.

LOUIS BALOG
Consulting Engineer
Binghamton, N. Y.

WHY guess about wire rope selection?



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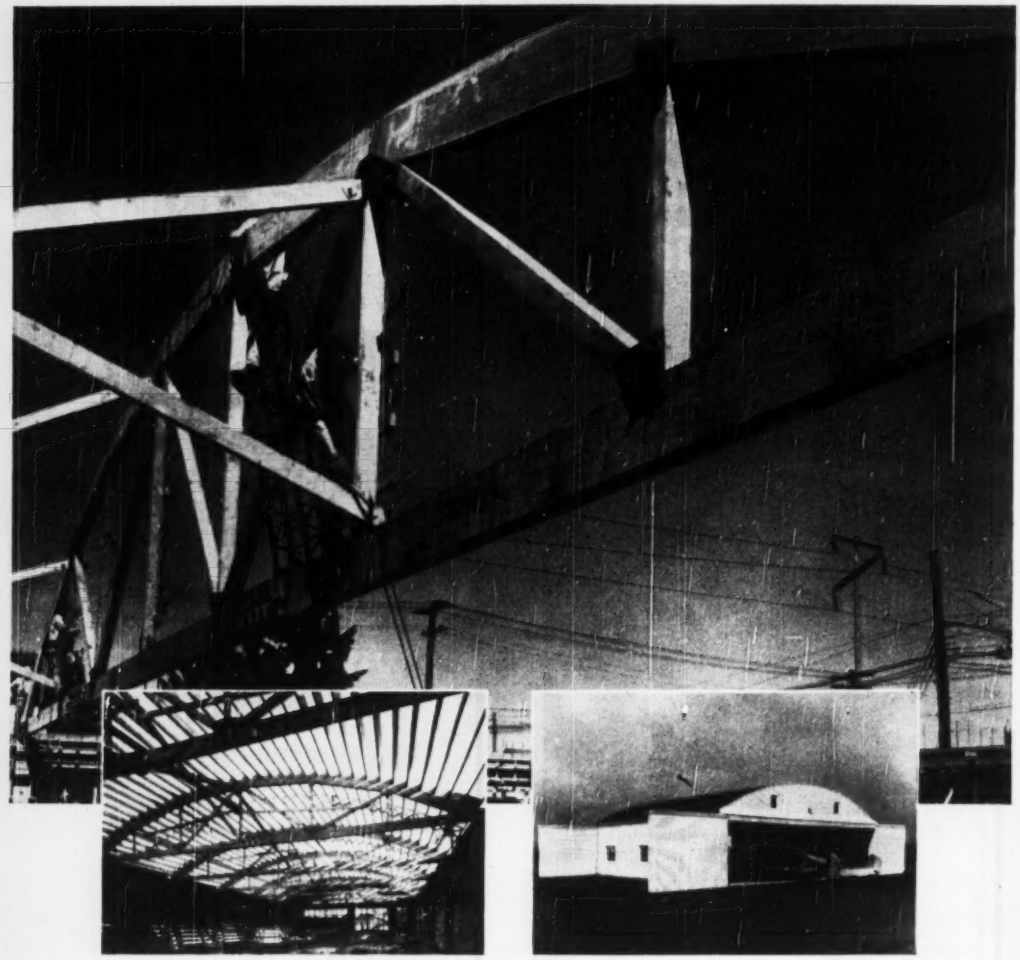
MONOCORD TIMBER TRUSSES by Weyerhaeuser



Assembled and erected at job site by local crews for clear-span, post-free buildings.

DESIGNERS and builders find that Monocord Trusses make it possible to economically meet the growing demand for clear-span, post-free buildings . . . such as supermarkets, display rooms, garages, community buildings, warehouses, churches, gymnasiums and hangars.

The Monocord Timber Roof Truss is fabricated according to design specifications and delivered to the job site ready for assembly and fast erection.

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The work of structural engineer and builder is remarkably simplified by specifying Monocord Timber Trusses. Tables of uniformly distributed design loads indicate sizes of standard trusses needed to meet load requirements for various spans. Monocord Truss parts are mill-fabricated for round top, flat top, or straight-pitched roofs. Truss members, including hardware, are shipped on lumber freight rates in mixed cars with lumber. All parts are identified for quick assembly by local crews.

A descriptive booklet on Monocord Timber Trusses, including tables of uniformly distributed design loads, will be mailed on request. Weyerhaeuser is ready to confer with your organization on any Monocord Timber Truss need. Write nearest office.

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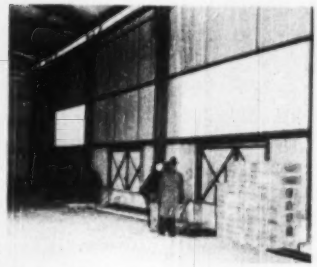


PLEXIGLAS SHEETS, mounted across 16 ft. openings, diffuse daylight.

Translucent plastic installed without sash

Large panels of corrugated translucent white Plexiglas serve as daylight openings in the Nicetown, Philadelphia, plant of the Midvale Steel Co.

Use of these acrylic plastic sheets for daylighting buildings results in the elimination of steel sash. Each opening is 16 ft long and is covered by four 48x72-in. × ⅛ in. plastic sheets.

Corrugated to a 2½-in. frequency, it is lapped over one corrugation with the structure's galvanized iron sheathing at each end of an opening, and with the edges of adjoining plastic sheets. The panels are held in place at top and bottom by 20-gage sheet-iron flashing, being bolted at the bottom and riding free at the top. Oversize boltholes and neoprene grommets are used with all edge and bottom bolts, to prevent damage at these points from expansion or contraction.

Plexiglas panels were prepared by Rohm & Hass of Philadelphia.

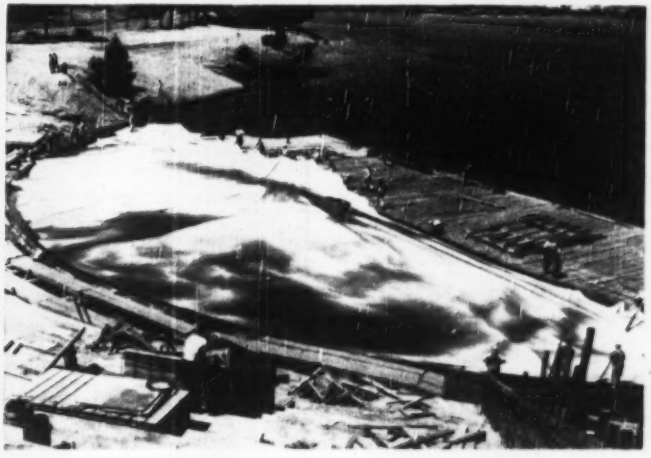
Rope set in concrete produces a flagstone effect

Innovation in concrete finishing produces a decorative effect for concrete drives, walks, porches, and other applications where a flagstone, slate, or similar finish is desired.

Slabs are poured in the usual manner. Sections of the surface are then divided by embedding lengths of rope in the wet mortar. Rope of 1-in. dia has been found to be most satisfactory, and it should be embedded to its full thickness so that rope is level with the surface of the concrete.

After concrete has taken its initial set, the ropes are carefully removed and the undercut joints left are pointed. Mortar used for pointing fills the undercut sections and binds the pointing so it will not chip or work out of position.

This system of producing decorative concrete was suggested by Reardon Industries, Inc., Cincinnati, Ohio, producers of Reardonite concrete-coloring compounds.



BLANKET FOR MUD—When a contractor for the Seattle, Wash., Park Board tried to dredge one end of Green Lake to form a pool deep enough for diving, he ran into trouble. When the heavier top layer was removed, softer lower mud began "boiling up," rising as much as two feet in little more than a day. With a water show scheduled for the pool and the "aquatheater" stadium built adjacent to it, there was no time to build a concrete floor for the pool, so a 1,500-yd sheet of 12-oz. canvas was ordered. Rolled up on one side of the pool, the canvas was pulled across the pool, then weighted down with a layer of sand 6 in. thick and sunk. The canvas made a satisfactory bottom.

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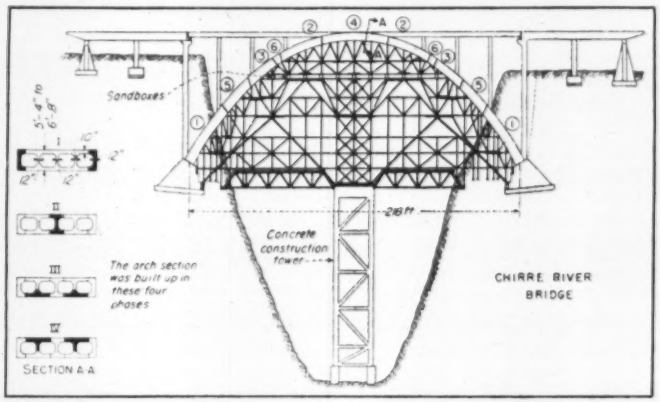
DEVELOPMENTS ABROAD

FINISHED ARCH spans gorge and falsework's job is over. Timber scaffold is being dismantled from atop 133-ft reinforced concrete construction tower.



FOUR PHASES of construction divide the cellular arch transversely. Each of these phases was completed throughout the full length of arch in the numbered steps shown above before the next phase was started.

Spectacular scaffold, cellular concrete featured on high arch bridge in Chile

A fixed-end arch of cellular reinforced concrete has been built on novel reinforced concrete and timber falsework high above a gorge of Chirre River near Crucero in southern Chile. This new structure spans 218 ft and carries a single track to bring the heaviest equipment of Chilean National Railways into fertile Chirre Valley and to the summer resort at Puyehue nearby.

Construction of the cellular concrete arch was completed according to a careful sequence of pours as shown in the accompanying drawing. Care was taken in devising the pour procedure: (1) to prevent undue deflections in the formwork and (2) to avoid eccentric loading.

Timber scaffolding to support the forms was erected on timber trusses spanning from the gorge walls to a 133-ft high concrete construction tower at midstream. Falsework included sandboxes by which it could be retracted or lowered after each completed phase of construction to permit

(Continued on page 54)

in NEW ENGLAND

BOSTON . . .

Darex AEA permits the use of low (3½") slump in the heavily reinforced concrete specified for the Veterans Administration Hospital, Boston, Mass. The project will require 26,000 yards of Darex AEA concrete.

The Annisquam River Bridge, Gloucester, Mass., is being paved with Darex AEA concrete to increase resistance to freezing, thawing, and de-icing salt action.

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deflection of the finished portion. Thus the weight of each finished phase was taken off the forms before the next phase was poured. This permitted economy in falsework and also served to prestress the structure during construction.

• **Pour procedure**—The four phases of concrete casting are shown in the accompanying cross-sectional views, and the steps within each phase are numbered along the elevation view of the arch.

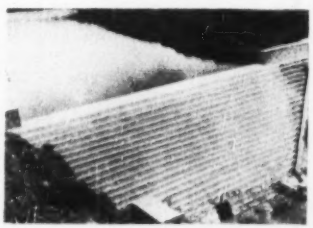
Phase I included the two outer ends of the arch's cellular cross-section. These two channel-shaped strips were poured in the six numbered steps, through the entire length of arch. After phase I had set, it was allowed to deflect and carry part of its own weight; it took on about 150 psi compressive prestress.

Transverse members cast at panel points of the arch to carry roadway-supporting columns braced these outside ribs of phase I and tied in concrete of later phases so that the whole structure would deflect together with subsequent falsework adjustments.

Then phase II was poured in the six progressive sections, given time to set, and allowed to deflect. Phases III and IV were done likewise to complete the cross section—about 17 ft wide and varying in thickness from 5 ft 4 in. at the arch center to 6 ft 8 in. at the piers. Web thickness of the cells is 12 in. except for two of the inside verticals which are 10 in. thick.

Choice of reinforced concrete for the bridge as well as for the construction tower—was influenced by the shortage and price of steel in Chile at the time of the project's conception.

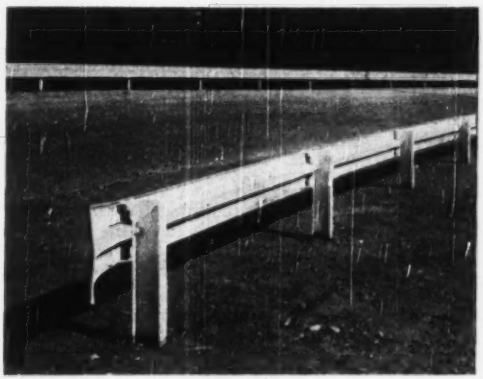
Chirre River Bridge was a project of the Railway Department of the Ministry of Public Works of Chile.



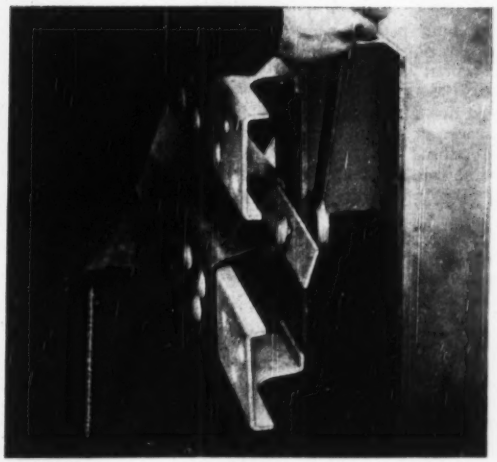
FOR CYPRUS IRRIGATION—Cyprus, an eastern Mediterranean island 140 miles long by 60 miles wide, depends upon agriculture, which, in turn, depends upon irrigation. The Kaloknorio Dam stops the Maronlina River, and holds 10,000,000 gal. Kliron, the biggest village to benefit by it, has paid one-fifth of the cost. Upon completion by the Irrigation Department of this British possession, it was turned over to the village irrigation committee to maintain and administer.

Painted a gleaming white, Safety-Beam stands out boldly against Vermont's rolling hills.

FOR THAT EXTRA MARGIN OF SAFETY USE Safety-Beam



Rear and front views of Safety-Beam on highway in Pennsylvania.



Safety-Beam is easy to install, as it fastens to post with one bolt.

To be sure of extra protection for motorists at such dangerous highway locations as bridge approaches, sharp turns and embankments, use Bethlehem Safety-Beam Guard Rail.

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Two features make Bethlehem Safety-Beam Guard Rail ideal wherever extra protection is required: (1) great strength, and (2) ability to absorb impact. This husky rail consists of strong sections of steel plates, bolted together securely to form a continuous, impact-absorbing beam. When vehicles strike Safety-Beam, impact is distributed along the rail, making it next to impossible to crash through the rail and off the shoulders. In most cases, runaway vehicles are deflected parallel to the rail.

EASY TO INSTALL

Safety-Beam Guard Rail means real economy, because it can be installed quickly, even by unskilled labor. It fastens to the post with one bolt. There's no need for end anchor rods, special tools or complicated adjustments. Safety-Beam is easily visible too, even at night. It is regularly furnished in 12 ft. 6 in. lengths, and in longer lengths for special requirements.

Folder 545 includes standard details and assembly plans for Bethlehem Safety-Beam Guard Rail. The nearest Bethlehem sales office will be glad to supply a copy. Or send your request to us at Bethlehem, Pa.

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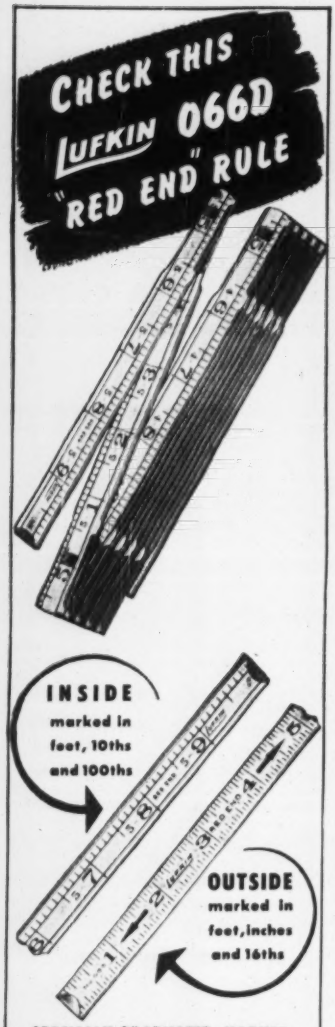

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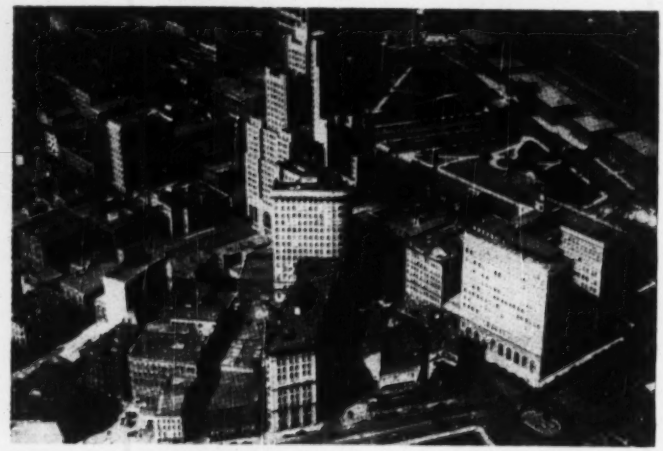

PROGRESS IN PROVIDENCE—In the last three or four years more than $3 million has been spent in a reconstruction program at Providence, R. I. The city has a master plant for land use prepared by the City Plan Commission. In accordance with a state law, the Providence Redevelopment Agency has been created. Its broad purpose is to transform run-down sections into desirable sites for modern homes and industrial plants. In 1948, the first full year of operation, there were two major accomplishments—Official designation by the city council of 17 redevelopment areas; and the approval of a $2 million bond issue to be used in setting up a revolving fund. Plans have been prepared for a metropolitan expressway and an express bypass of Olneyville Square. The city is also spending hundreds of thousands in modernizing its sewage plant.

Providence, R. I., may spend $8 million for parking

Providence, R. I., hopes to create 2,600 new downtown parking spaces at an eventual cost of $8,000,000. The City Plan Commission last week approved an outline of the plan, first phase of which goes to the voters for approval this month.

The outline follows:

A short-term program centering on construction of two garages. Some 250 spaces for short time parking would be created on the north and south fringes of the central business district if a $1,700,000 bond issue referendum is approved this fall.

Creation of 200 spaces in the reworking of a rotary at Pershing Square. Companella & Cardi Construction Co. has made a low bid of $513,715 on this phase.

Addition of 400 spaces by improvements along the city's waterfront, where, the plan commission notes, "private interests have begun to carry out a large part of the improvements."

A long-range program proposing the construction of two additional garages to serve short-time parkers, one in the financial district and one in the shopping center. The four short-time parking garages would be within walking distance of all downtown locations.

Construction of an all-day garage near the financial section accommodating 600 cars. Pershing Square and riverfront improvements eventually would accommodate all-day parkers also.

The entire program earmarks $5,640,000 for the four short-time garages, $2,152,000 for the all-day garage, $52,000 for Pershing Square improvements, and $620,000 for river front work.

City Planning Director Frank H. Malley and Charles B. Wood, senior planner, say the immediate program will satisfy only about two-fifths of the present need for new spaces but will give experience for later action.

The program has been based upon studies by Dwight T. Myers, city traffic engineer, and Louis B. Whetmore, redevelopment director. These studies showed a need for nearly 3,000 more parking spaces downtown.

Municipal Briefs

Paving in Mobile—City Commission of Mobile, Ala., has started work on its $7,000,000 street paving program with bonds sold to finance the work on 73 local streets. Work to cost $2,060,394, will be done by four local firms.

Toronto developments—Toronto, Ont.,

(*Continued on page 59*)

"Our equipment performs better, stands up longer with GULF QUALITY LUBRICANTS and FUELS"

says Peter Salvucci

Peter Salvucci, Waltham, Mass., has a $957,946 contract for extensive highway construction work in the Towns of Acton, Boxboro, and Littleton, Mass. The projects are well ahead of schedule.

Peter Salvucci is one of a number of prominent New England contractors who find that it pays to use Gulf quality lubricants and fuels.

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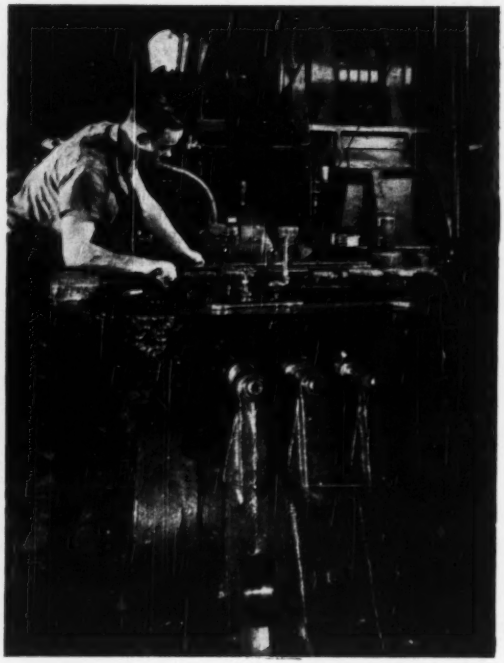

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Judd Barner operates a Lorain Power Shovel for the Dallas County Road Commission, Fordyce, Arkansas. Says Judd: "It is a tough little machine and I enjoy operating it."

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has authorized an early start on 25 municipal developments totaling between $25,000,000 and $30,000,000. These include: Parks, a municipal golf course, $265,000; street and highway improvements; nurseries and day care centers; and homes for the aged. Street and highway improvements total $13,000,000; welfare centers about $2,750,000; parks and swimming pools about $1,000,000; new exhibition buildings $630,000; new island docks $220,000, new main sewers $1,400,000, new fire halls, library, schools and renovation of noteworthy local historic sites $1,500,000.

Parking meters—John F. Ward, city purchasing agent, Chicago, has recommended the purchase of 15,000 parking meters on the bid of $850,837.50 of the Duncan Parking Meter Co.; Middletown, Ohio, city commissioners have purchased 600 new parking meters to replace 300 old ones and to extend the present metered area; expecting an influx of civilian and military personnel from nearby Camp Atterbury, Ind., town council at Edinburg, Ind., has approved the installation of 100 new and improved parking meters in the downtown business section.

Waterworks improvements—City of Norfolk, Va. plans constructing $6,500,000 waterworks improvements. Whitman, Requardt & Smith, Baltimore, Md., are consulting engineers.

For public information—The public works department of Milwaukee, Wis., is placing signs at its construction projects explaining what the work is and how much it costs. For example, at a street improvement job the sign reads, "Kilbourn Ave. Project, $212,400—Investment in better transportation."

Street name signs—The Seattle, Wash., city council has set aside $370,000 to install a new city-wide system of street name signs next year. City Engineer R. W. Finke will supervise installation of 10,000 large-size metal-porcelain signs on steel standards that will be legible from a greater distance than was the case with the old model.

To improve water system—An ordinance authorizing Wilmington, Del., to borrow $1,500,000 for improvements and new equipment for its water system has been approved by the city council. It permits the city to issue bonds to defray the costs of modernizing the mains and pumping equipment.

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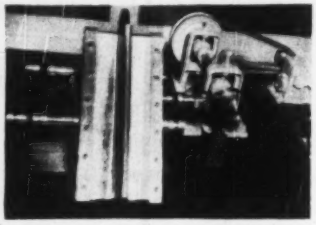
EDUCATION and RESEARCH

Copper expansion joints get strong flexing test

Results of a research project in which copper expansion joints were subjected to a flexing test approximating the effect of as much as a 100 years of actual service have been announced by Ivar E. Anderson, of the Research Department of Revere Copper and Brass, Inc.

Expansion joints are needed in concrete slabs and walls, masonry walls and other places where weather conditions require provision for alternate expansion and contraction. The joint in the shape of an inverted "V" permits the necessary "play." The object of the research was to determine which kind of bend, and description and weight of metal, would best withstand the flexing caused by temperature changes.

Special apparatus was designed which, operating by electric motor, flexed the bends at the rate of six cycles per minute, so that within a few weeks it was possible to run up as many as 40,000 flexures. The conclusions of Mr. Anderson and his associates were: The greater the height of leg, the greater the number of flexures sustained before failure; the greater the radius of bend at the crown, the greater the number of flexures sustained before failure; joints formed from copper of cold rolled temper usually sustained a slightly greater number of flexures before failure than those made from soft temper; and the thinner the gage of the copper, the greater the number of flexures sustained before failure.



TO TEST EXPANSION JOINTS—This is the set-up employed by Revere Copper and Brass Incorporated for testing resistance to failure of copper expansion joints. The joint under test was flexed through six cycles a minute, total travel, or flexing distance, being set at ¾ in.

The latter conclusion was to be expected, the report points out, because, if other factors are held constant, the maximum fiber stress would be lower, the thinner the material. However, factors other than the capacity to withstand flexure usually enter into the design of expansion joints. The research shows that if it is considered necessary or desirable to use heavier gage copper for certain expansion joint installation, it is only necessary to increase the height of the leg to insure adequate resistance to failure by flexure.

To build engineering lab at Princeton University

Construction of the James E. Hayes Engineering Laboratory has been approved by the Board of Trustees of Princeton University and excavation work has started. It is expected that the building will be completed in September, 1951.

The contract has been awarded to the Matthews Construction Co. of Princeton, the low bidder. The building will be of brick and will extend east from the South wing of the John C. Green Engineering Building. It will front on William Street.

The building will cost approximately $200,000. James E. Hayes, in whose honor it will be named, received his C. E. degree from Princeton in 1895 and his E.E. degree two years later.

The New York architectural firm of Voorhees, Walker, Foley and Smith prepared the plans for the building, which call for a one-story structure approximately 100 ft. square with open construction inside for laboratory purposes.

When completed the new area, plus the present machine shop area which constitutes the central section of the main engineering building, will be devoted to mechanical engineering. The south wing of the present building is devoted to electrical engineering and the north wing will be for civil engineering when the present materials testing equipment is moved into the first floor laboratory of that wing of that building.

Centennial of engineering—Frank W. Edwards, director of the department of civil engineering at Illinois Institute of Technology, has been appointed to assist Maj. Lenox R. Lohr in making plans for the Centennial of Engineering in 1952. The celebration, sponsored by the American Society of Civil Engineers, will be held in Chicago to commemorate the founding of the society in the year 1852.

Ten years of progress at Ill. Inst. of Technology

The Illinois Institute of Technology, Chicago, founded 10 years ago through the consolidation of the Lewis Institute and the Armour Institute of Technology, has more than tripled its assets and has expanded into one of the most important educational institutions of its type in America, its president, Dr. Henry T. Heald, reported Oct. 13.

Assets have increased from $5,000,000 in 1940 to more than $17,000,000 in 1950. Nearly 1,000,000 sq ft of space is now in use for classrooms, laboratories, administration and residence areas.

Land holdings have increased from seven acres to 85. Degrees are awarded in eight new graduate fields and in 13 undergraduate fields. Twelve new buildings have been erected in the last 10 years in the center of what was once America's worst slum area. All of this progress has been a stimulus for the redevelopment of the whole central south side of Chicago.

Educational Notes

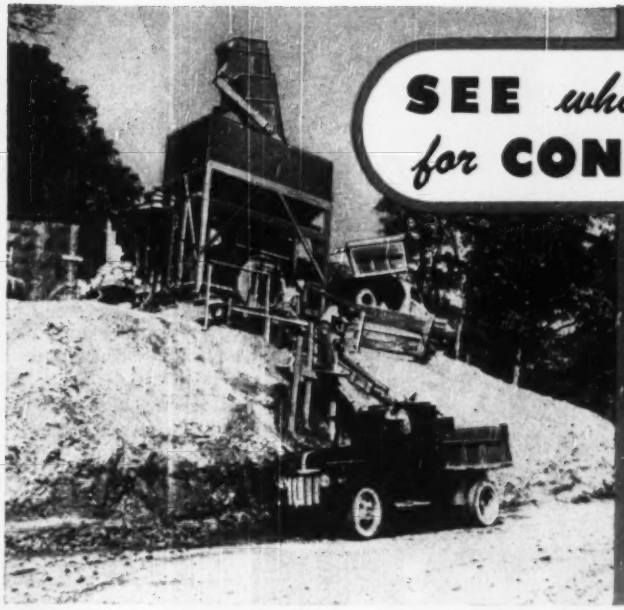
New vice-presidents—John Rettaliata, dean of the division of engineering, Illinois Institute of Technology, Chicago, has been named a vice-president, in charge of academic affairs. Haldon A. Leedy, director of the Armour Research Foundation of the institute, has also been named a vice-president.

Science building—The University of Notre Dame, South Bend, Ind., will erect a $2,098,000 science building.

Engineering scholarship—The Norfolk and Southern Railway Co. has announced the second annual award of its North Carolina State College engineering scholarship, valued at $2,000, established to benefit children of employees of the railway, and graduates of high schools in the region served by it. The winner is Louis Stanton Hales, who is a son of an employee of the company and is studying civil engineering at N. C. State.

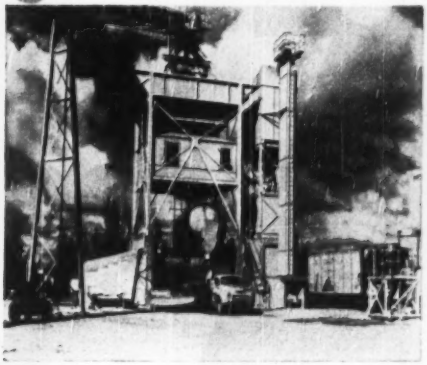
Properties of soils—The division of engineering extension of the University of California is presenting at 12 places throughout the state a short course on properties of soils and applications to highway construction. Subjects include: Basic concepts of soils; properties of soil types; effect of climate; soil sampling methods; soil tests, behavior of soils under wheel loads; and application of test results to subgrade and base-course design. Conductor of the course is H. P. Pickering, assistant engineer, Institute of Transportation and Traffic Engineering.

SEE *what* ERIE *offers for* CONCRETE *projects*



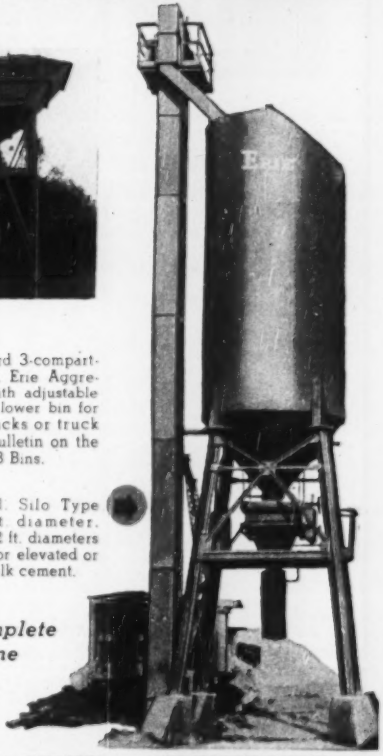
THE Erie Portable Concrete Plant at the left has produded 3275 cu. yds. of air entrained concrete for tunnel and spillway at the Burr Oak Dam sight. This plant features 20 cu. yd., 3 compartment bin loaded by integral 60 T. P. H. bucket elevator with materials batched thru hydraulically controlled 3 beam AggreMeter with 4th beam for water weighing. One man operates all controls, a helper loads bag cement. Takes about an hour to set up this plant and less to knock down for moving to next job.

Erie Portable Concrete Plant made 3275 cu. yds. of concrete at Burr Oak Dam in Ohio.



Erie 3 yard Wet and Dry batch Concrete Plant includes Type CTB 160 cu. yds. 3-compartment AggreMeter Plant connected to Erie M-3 492 bbl. single compartment Cement Bin loaded by undertrack hopper to vertical 50 T. P. H. bucket elevator. Produces up to 500 yards of concrete per day.

Erie G. T. B. 79 yard 3-compartment bin with 3 yd. Erie AggreMeter. Equipped with adjustable columns to raise or lower bin for charging batch trucks or truck mixers. Write for bulletin on the complete line of GTB Bins.



Erie, CSB 592 bbl. Silo Type Cement Bin, 11 ft. diameter. Available in 11 & 12 ft. diameters in many capacities for elevated or ground storage of bulk cement.

Write for Booklet 2L-2 for complete data on the line of Erie 2-line Contractor Buckets.

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STEEL CONSTRUCTION COMPANY

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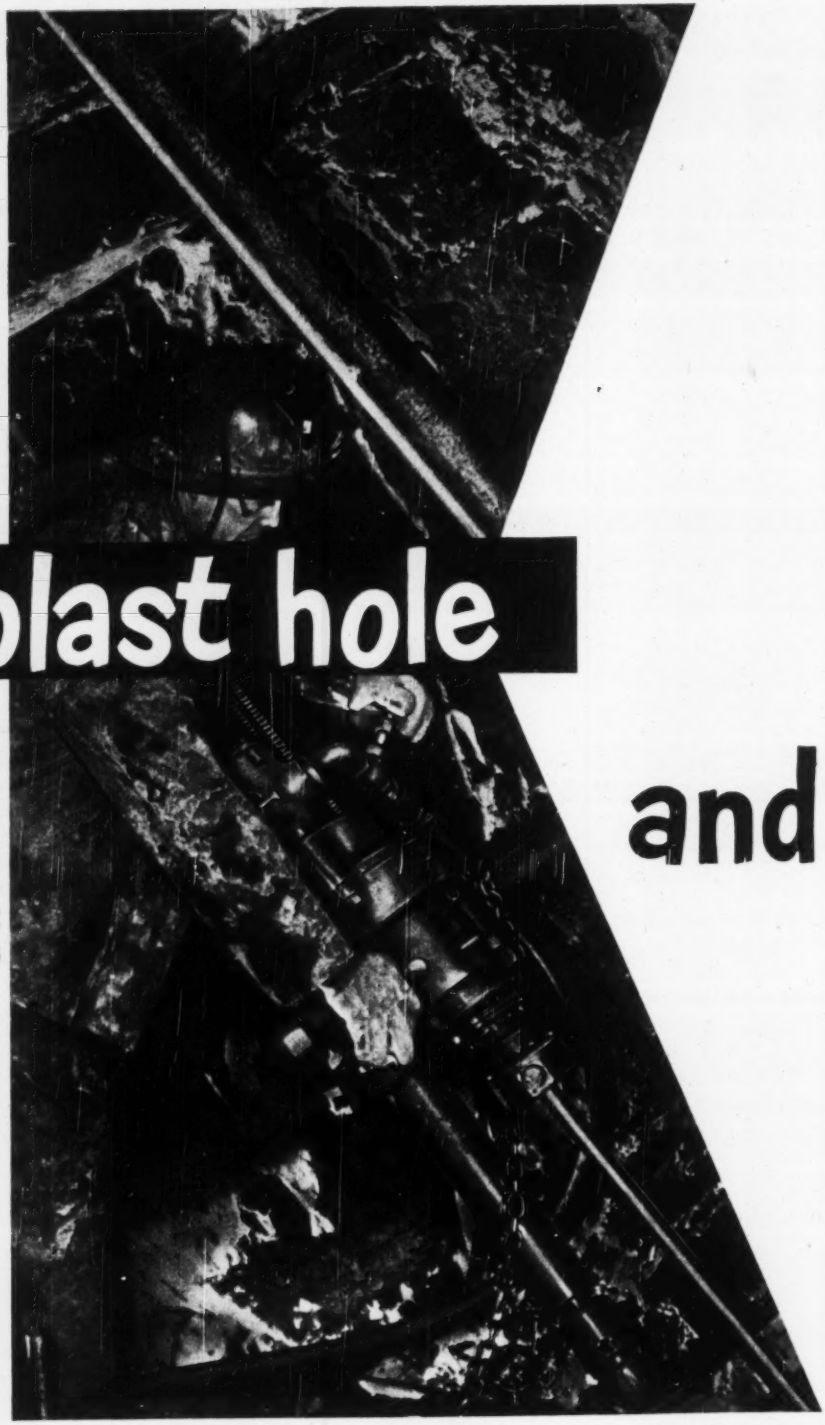
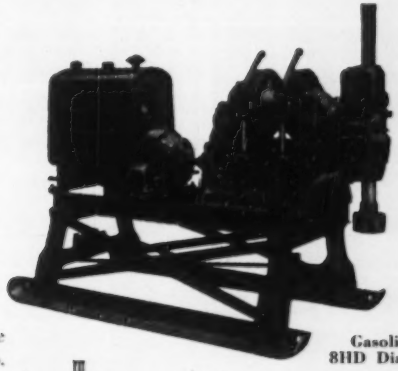


CP-55 DIAMOND DRILL



Gasoline-driven CP No. 8HD Diamond Core Drill

Built for exploratory drilling from the surface, the gasoline-driven, skid-mounted CP No. 15HD and No. 8HD DIAMOND CORE DRILLS are readily moved from hole to hole under their own power.

Both are specifically designed for engineer's test borings, mineral prospecting and shallow oil structure drilling. Operating at the continuous high speed made possible by bortz bits, they give exceptional performance with remarkably low maintenance.

CP No. 15HD, with E-EX fittings, has a capacity of 2250 feet; CP No. 8HD, a capacity of 1250 feet. Both are also available with electric or Diesel drive, and with hydraulic head in place of screw feed.

Write for Bulletin 313

Gasoline-driven CP No. 15HD Diamond Core Drill

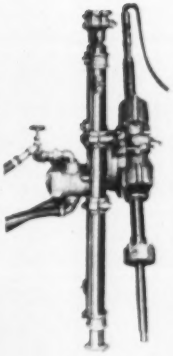
exploratory drilling

CP-55—FASTEST DRILL IN ITS CLASS

—designed around the improved CP Rotary Air Motor —the fastest, most powerful rotary motor on a diamond drill. For underground blast hole and exploratory drilling, the CP-55 DIAMOND DRILL is easy to handle; weighs only 160 pounds; requires a minimum amount of air per foot drilled.

Conservatively rated at 500 feet with E-EX fittings. Equally efficient for coring, non-coring or blast hole operations.

Write for Bulletin 318



Double-column mounted CP No. 12 Diamond Core Drill

Designed for underground use, the air-driven CP No. 12 DIAMOND CORE DRILL has a double-column mounting. Powered by a CP 25 h.p. rotary twin-air motor, it gives the same excellent performance as all other CP Diamond Drills. Its capacity, with E-EX fittings, is 1250 feet.

Motor, column and swivel head are readily dismantable for convenient underground transportation to "hard to get at" places.

Write for Bulletin 313

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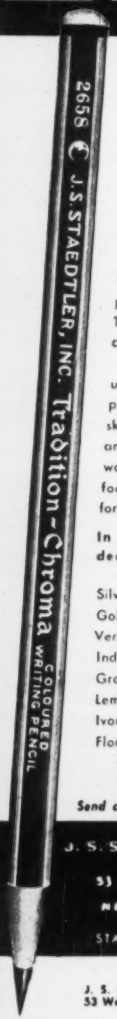

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MEN AND JOBS

John V. Brink, a junior assistant engineer with the United States Public Health Service, has been made head of the Washington, D. C., Health Department's rodent control section.

William Morton of Winnipeg, Man., has been appointed Minister of Public Works, Province of Manitoba.

George M. Crawley, sanitary engineer, has been made head of the city sewage disposal plant in Erie, Pa., succeeding **Fred G. Diefendorf,** resigned. Mr. Crawley has been a sewerage aide at Fort Belvoir, Va. and formerly was head of sewage disposal at State College, Pa.

H. L. Worst, district maintenance engineer at Williamsport, Pa., has become toll bridge maintenance engineer as successor to James R. Long, deceased. With headquarters in Harrisburg, his duties will consist of operation and maintenance of the ten intra-state toll bridges taken over by the highway department.

S. S. Shaat, graduate of N. C. State College, has joined the Division of statistics and planning of the North Carolina Highway Department, and is establishing hazard ratings of rural railroad grade crossings.

Maynard Knott of Clayton, N. C., has been named director of municipal public works and utilities there.

Erwin R. Kinnear of the J. A. Jones Construction Co., Charlotte, N. C., has been appointed general manager of construction on the $10,000,000 Chorrera Guayabo Dam in the Lempa River, and control installations for Lake Guija in San Salvador, El Salvador. Contract for the project has been awarded the Charlotte firm.

Edward J. Lauber, Toledo, deputy Lucas County, Ohio, engineer, has been appointed to succeed John W. Klag as Toledo city streets commissioner. Mr. Lauber is a graduate of St. John's University, and was with the U. S. Army Engineers and with G. L. LeBoiteaux, general contractor.

James Melvin Orman, city engineer at Bryan, Tex. for three years, has been made Public Works Director of Midland, Tex. He is a graduate of Texas A. and M. College.

Robert James Gibb, 70, has retired after 37½ years of civic service in Edmonton, Alta. The former city commissioner, sewer and water engineer, officially retired on March 30, 1946, but was pressed back into civic service to plan Edmonton's vast sewer expansion program and to act as development engineer.

Spencer D. Downing and **Bernal H. Swab** have withdrawn from the consulting engineering firm of Jones, Henry and Schoonmaker which will be continued by Thomas B. Henry, George H. Schoonmaker and Leon G. Williams at 821 Security Bldg., Toledo, Ohio.

Theodore F. Collier, formerly in charge of structural and architectural layout and design of various steam electric and industrial developments for Sanderson & Porter, has joined

(*Continued on page 66*)

C. W. Nichols, chairman of the board of Nichols Engineering and Research Corp., center, was host to members of the American Public Works Association, following its recent annual meeting. Some of the officials present were, left to right, E. P. Decher, secretary of the Newark Joint Sewer Commission and president of APWA eastern chapter; Mayor B. M. Degnan, West Orange, N. J.; Mr. Nichols; Milton Rosen, public works commissioner, St. Paul, Minn.; and J. S. Flockhart, supervising engineer, bureau of sanitation, Department of Public Works, Newark, N. J.

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Amazing new Exclusive Clipper Design. Now the originators of Masonry Saws give you flexibility that can't be beat!

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Nowhere in the World can you equal the Performance of Clipper for cutting Brick, Tile, Concrete Block.

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The cutting head of your Model HD Masonry Saw is quickly placed in the new CHD four wheel Cart. Roll it anywhere!

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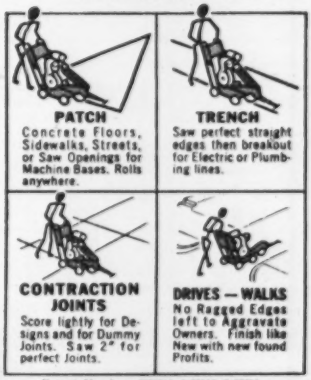
Yes...NOW YOU CAN SAW ANYTHING!



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Concrete Floors, Sidewalks, Streets, or Saw Openings for Machine Bases. Rolls anywhere.

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Saw perfect straight edges then breakout for Electric or Plumbing lines.

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Score lightly for Designs and for Dummy Joints. Saw 2" for perfect Joints.

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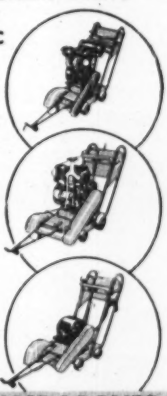

NO. C-75
is Instantly Portable. Tops in Performance with every Clipper Feature.

NO. C-130
Power Packed to make the toughest job easy.

NO. C-15 and C-20
With special Electric Motors for tough production jobs.

Saws Concrete Like *MAGIC*

Imagine being able to use your Clipper Saw so many different ways. Saw Brick & Tile...Concrete Streets or Floors...Slabs of Stone...It's new found profits!

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When you are ready to saw stone or transite, merely place the Elevated Tracks over the Material and your Clipper Sails Right Thru.

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4. Wet Cutting Abrasive
5. Dry Cutting Abrasive
6. CBR Breakage Resistant

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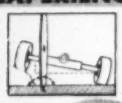
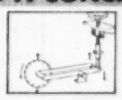
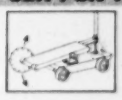


1. Clipper "No Bind" Floating Three Point Suspension Automatically protects blade.



2. Positive Screw Feed Instant control raises or lowers blade smooth, easy.

3. Adjustable Depth Lock. Set this handy stop for whatever depth desired.



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Increased production at a West Coast assembly line caused a parts shortage. Shipment in transit was located at St. Louis in late afternoon and Air Expressed to coast. Delivered 5 A.M. next morning. Speed like this keeps production rolling, lets you meet every delivery date. Shipping charge for 50-lb. carton: **$24.56.**

You get door-to-door service *included* in the low rate. This makes the world's fastest transportation method convenient and easy to use. Specify it regularly to keep customer service high—and high-cost inventories low.

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the staff of Westcott & Mapes, consulting engineers of New Haven, Conn., as senior structural engineer. He is a 1924 University of Illinois graduate, and at one time was engaged in technical promotion for the Portland Cement Association in Chicago.

Robert A. Flynn has been promoted to senior planner on the city plan board, of Dayton, Ohio, succeeding Francis Bennett, resigned. He was an associate planner for the Montgomery County Planning Commission. He is a graduate of the University of Cincinnati.

Arthur Byall, formerly county and state highway supervisor, has been named county commissioner in Allen County, Fort Wayne, Ind., succeeding the late Charles E. Freiburger.

Frank E. Donahue, formerly vice-president of Circle Construction Corp. of White Plains, N. Y., is now associated with Cooney Bros., Inc. and County Asphalt, Inc., 129 Main St., Tarrytown, N. Y. He will handle contract work for both companies.

Arthur Saunders, Jr., formerly with the North Carolina State Highway Department at Asheboro, N. C., has joined the engineering staff of the city public works department at Greensboro, N. C. At one time he was with the W. H. Weaver Construction Co. of Greensboro.

Mark D. Hollis, chief sanitary engineering officer of the United States Public Health Service, has been named by President Truman to the Interstate Commission on the Potomac River Basin. He will represent the federal government, replacing Abel Wolman, resigned. Mr. Hollis has been an assistant surgeon general of PHS since January, 1948. He received his degree in civil engineering from the University of Georgia in 1931. In addition to serving in various states, he was with the administration of the National Institutes of Health in Bethesda in 1934. The Potomac commission is concerned with development of the river basin, especially pollution abatement and flood control.

John DuVal, city planner of Houston, Tex., has resigned to become director of city planning at Little Rock, Ark.

John H. Marburger, Jr., formerly of the Engineering Department of the Baltimore and Ohio Railroad and the Reconstruction Finance Corporation, has become office engineer of Prince George's County, Md., at upper Marlboro.

Irvin Herried, airport construction engineer, Madison, Wis., has recently been appointed chief engineer of the Wisconsin State Aeronautics Commission.

John K. Patterson has become acting project engineer of the harbor project at Memphis, Tenn., in place of Col. Earl P. Houston, project engineer, who is now commanding officer of the 347th Engineer Aviation Group just mobilized. **Paul E. Gieselmann**, assistant to the chief, operations division, will succeed Maj. F. E. Tucker of the 347th as chief of the inspection branch.

Transfers have been announced by the Virginia highway department, as follows: **O. T. Aichel**, resident engineer at Abingdon, will go to Fairfax, replacing **J. H. Phillips**. Aichel will be responsible for state road work in Fairfax and Arlington Counties. Phillips will replace **E. D. Hubbard** at Norfolk and will be resident engineer for Norfolk and Princess Anne Counties. Hubbard will replace Aichel at Abingdon, and will be in charge of highway work in Washington and Smyth Counties. **Frank Fawcett** of Luray and **J. R. Thomas**, King George, will swap assignments. Thomas' district will include Page, Warren and Clarke Counties. Fawcett will direct highway work in King George, Spotsylvania and Stafford Counties.

S. G. Nowell has been retained as construction engineer on Section 2 of the New Jersey Turnpike for Gannett Fleming Corddry and Carpenter, Inc. Mr. Nowell was for many years associated with the Pennsylvania Department of Highways and was in charge of construction in the Everett Division on the original Pennsylvania Turnpike. Clark and Groff Engineers, formerly known as Groff and Clark, engineering consultants of Salem, Ore., announce the addition to their firm of **Lloyd K. Clark**, sanitary engineer. He recently completed a four-year sanitation research and development project for the Association of American Railroads at Baltimore, Md., and is a former state sanitary engineer of North Dakota.

Col. Kenneth M. Moon, commanding officer of the Engineer Depot, Granite City, Ill., for the last two years, is now district engineer at San Francisco, succeeding **Col. Tremont S. Tandy**, presently assigned to duty at Camp Carson, Colo.

Col. R. L. Dean, formerly district engineer, Corps of Engineers, at Rock Island, Ill., has been re-assigned to Fort Bragg, N. C.

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"TWISTED BAR" Electroforged Steel Grating

Blaw-Knox Electroforged Stair Treads available with rolled diamond checker plate nosing, twisted crossbar nosing or abrasive nosing.

THE twist does the trick—twisted bar construction gives greater traction, makes slipping impossible even if the grating is wet, greasy or icy. The slightly roughened surface grips shoe soles for *extra* safety, yet the over-all surface is level. Trucks and other wheeled vehicles roll freely. In addition, Blaw-Knox Steel Grating is electroforged into one piece for extra strength and durability.

OTHER ADVANTAGES: Maximum open area for light and air. Self-cleaning, easy to maintain, economical to install.

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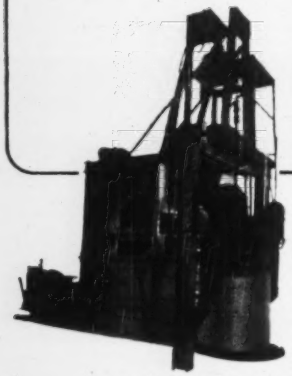

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MEETINGS

Prof. Leo Blumberg, head of the engineering department of the Pennsylvania Military College, has been elected chairman of the Delaware Board of Registration for Professional Engineers and Land Surveyors. Other officers are: John I. Cahalan of Wilmington, vice-chairman, and James E. Haddaway of Wyoming, Del., secretary. Other members of the board are Hyland P. George of Wilmington, Thomas B. Evans of Wilmington, and Harold Cook of Laurel, a recently appointed member.

Twenty top engineering educators and industrial leaders spoke at the recent annual meeting of the American Society of Engineering Education, Upper New York State Section, on the University of Buffalo campus. More than 100 educators represented the engineering colleges of New York State outside New York City. In addition, there were delegates from the New York State institutes and others who are affiliated with industries of the state. Faculty members of the University of Toronto were special guests.

J. Norman Pease of Charlotte has been nominated president of the North Carolina Section of the American Society of Civil Engineers. Other nominations are: Carroll Mann, Jr., of Greensboro, first vice-president; and P. D. Davis of Durham, second vice-president. The nominations are tantamount to election and they will be formally named at the winter meeting of the chapter, to be held in Durham in January.

With more than 600 road engineers and public officials in attendance, the fourth annual Virginia Highway Conference was held Oct. 12-13 at the Virginia Military Institute in Lexington. A wide variety of Old Dominion road and street problems came in for full discussion. The road meet is sponsored annually by the State Highway Department and the engineering department of V.M.I. Groups participating included the League of Virginia Municipalities, the League of Virginia Counties, the Virginia Road Builders Association, the Governor's Highway Safety Committee, the U. S. Forest Service, the U. S. Bureau of Public Roads, the Virginia Highway Users Association, and the various State agencies concerned with motor vehicles, highways and law enforcement.

William J. Wenzel, consulting engineer, Great Falls, Mont., has been elected president of the Montana section of the American Society of Civil Engineers. George J. Hoge, Great Falls, secretary-treasurer, Mr. Wenzel succeeds Henry C. Helland, chief engineer for Canyon Constructors, contractors for construction of Canyon Ferry Dam, 17 miles east of Helena on the Missouri River.

Ira P. McNab, general manager of the Halifax Utilities Commission, has been elected president of the Dominion Association of Professional Engineers, with membership of 22,000 engineers.

The Northern New York Builders Exchange has been formed. Martin Fitzpatrick of Plattsburgh, president of the Champlain Valley Contractors Association, is president; Nelson Tanner of the Oswego Builders Exchange vice-president; Albert C. Hyde of Watertown, treasurer; and Don Davies of the Watertown Builders Exchange executive secretary. Aims of the organization are a program of protection for the public and betterment of the industry in general; formation of a code of ethics for the industry; compilation of statistics on building activities and requirements, and participation in civil defense programs.

Correction—In our article on the Water Resources Policy Commission in our Oct. 12 issue it was erroneously stated that John A. Short and Isabel Picken were associated with the Missouri Conservation Commission. The fact is that they were on leave of absence from the Missouri Division of Resources and Development. Mr. Short has since resigned to become the U. S. Department of Agriculture representative on the Arkansas-Red-White Rivers Inter-Agency Committee.

CALENDAR

North Carolina Section, AWWA, Washington-Duke Hotel, Durham, N. C., Nov. 13-15.

Florida and Cuban sections, American Water Work Association, Ft. Lauderdale, Fla., Nov. 13-15.

National Reclamation Association, Hotel Davenport, Spokane, Wash., Nov. 15-17.

Building Research Advisory Board, Research correlation conference, National Academy of Sciences Bldg., Washington, D. C., Nov. 21.

Indiana Water Conservation conference, Purdue University, Lafayette, Ind., Nov. 28-29.

Arizona Sewage & Water Works Association, Pioneer Hotel, Phoenix, Ariz., Nov. 30-Dec. 2.

American Association of State Highway Officials, Miami, Fla., Dec. 4-7.

County Engineers of Iowa, Iowa State College, Ames, Dec. 6-8.

Building Industry Employers of N. Y. State, ITEA Clubrooms, 2 Park Ave., New York City, Dec. 14-16.

A section of the engineering department—The Heald Machine Company, Worcester, Mass.

"Now...we get photographic intermediates quickly, economically"

reports

THE HEALD MACHINE COMPANY

Since 1947 the production of photographic intermediates has been easier, faster, more economical for The Heald Machine Co. *Thanks to Kodagraph Autopositive Paper.*

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Furthermore, Heald uses its direct-process machine for the exposure operation; standard photographic solutions for development. And there's this convenience, too: darkroom handling is a thing of the past! Both operations are performed under ordinary room light.

How "Autopositive" is used: A large percentage of the precision finishing machines manufactured by Heald are specially engineered to customer-specifications. And, frequently, Heald is requested to draw special units and fixtures on the customer's own drafting paper. These originals are reproduced on "Autopositive" (for Heald's record) and turned over to the customer when the job is completed.

Thus, when repair parts are requested or a duplicate order is entered, shop prints can be made promptly from the Autopositives. These new intermediates have dense photographic black lines on an evenly translucent base . . . will not smudge or smear in print production . . . turn out sharp, clean prints at uniform, practical machine speeds.

Kodagraph Autopositive Paper

"THE BIG NEW PLUS" in engineering drawing reproduction

- **It enables you, or your blueprinter, to produce positive photographic intermediates *directly* . . . at a new low cost.**
- **It preserves valuable original drawings . . . cuts redrafting costs.**
- **It restores old, soiled drawings . . . gives you cleaner, sharper prints.**
- **It gives you "photo-lasting" file copies, which will not curl, turn yellow, or otherwise deteriorate.**

A new illustrated booklet, "Modern Document and Drawing Reproduction," gives all the facts on this revolutionary photographic intermediate material. *It's free. Just mail the coupon.*

67

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Industrial Photographic Division
Rochester 4, N. Y.

Please mail a free copy of "Modern Document and Drawing Reproduction"—your new booklet on Kodagraph Autopositive Paper.

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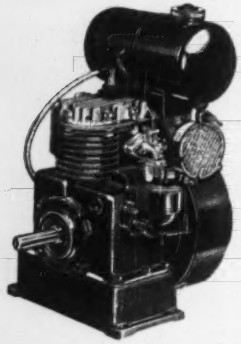

Model K7-1, 1½ H. P. 4-cycle, single cylinder, air-cooled. Length 13", width 14", height 17", Weight 38 lbs.

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Kohler Engines are designed, engineered and built to give the same dependable, economical service that has won world-wide acceptance for Kohler Electric Plants in construction and other industries. Made in several sizes, they are suited to a wide range of uses. Kohler engineers will gladly assist in working out applications for your particular requirements. Write for information. Kohler Co., Kohler, Wisconsin. Established 1873.

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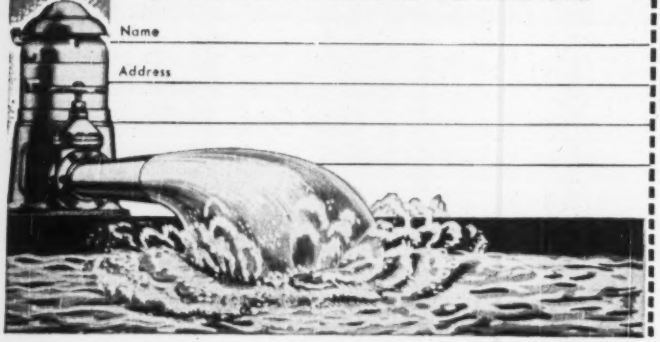
Send for new, 24-page BULLETIN No. 4700 on Deming Deep Well Turbine Pumps. Thousands of successful installations prove the dependability and efficiency of these vertical, multi-stage pumping units.

Deming Turbine Pumps are designed for wells 4 to 16 inches or larger in a complete range of capacities from 15 to more than 3000 g. p.m. Various types of heads meet all power drive requirements.



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OBITUARY

John J. Watson, 74, consulting engineer and town planner, who was with Previews, Inc., national real estate clearing house, died in New York City Oct. 24. He had an engineering degree from the University of Maryland.

Victor A. Pyles, 66, a heavy construction industry contractor, died Oct. 19 in Brooklyn, Md. Mr. Pyles formed a construction firm, which in 1930 was incorporated as the Victor A. Pyles Co. During World War I, he served as an infantryman and came out as a captain. In World War II he was called into the Air Corps and became a major, directing the construction of various airports.

Chester Lew Snow, 48, Silver Springs, Md., construction engineer for the Public Buildings Administration in Washington, D. C., for 22 years, died Oct. 21. Mr. Snow was on the construction staff of the National Institute of Health, Bethesda, Md. He attended George Washington University.

Peter W. Allwardt, 65, assistant engineer for the National Geographic Society for the last 12 years, died Oct. 20 in Washington, D. C.

Adam Tomcik, 61, civil engineer for the Pittsburgh Plate Glass Co. for 30 years, died Oct. 17 in Barberton, Ohio.

Chester M. Neff, 57, Columbus, Ohio, engineer for the Ohio Health Department since 1943, died Oct. 17 of injuries suffered in an automobile collision near Bluffton, Ind.

John G. Bullinger, 82, Toledo, Ohio, recently employed in the city engineering division, and prior to that a building contractor who erected numerous churches, schools, and commercial buildings in Indiana and Ohio, died Oct. 21.

William D. Darby, 58, a consulting civil engineer and a partner of Darby, Bogner & Associates, Milwaukee, Wis., died recently. He was graduated as a civil engineer from Valparaiso University in 1914. After working as a surveyor for the New York Central R.R. and the City of New York, he took an engineering position in the Gary, Ind., plant of the U. S. Steel Corp. in 1916. After working for a short time in the Chicago planning department, he became city engineer of West Allis, Wis., in 1921, a post he held for many years. Since 1946 he

had been state military engineer in charge of the armories of the Wisconsin National Guard.

William Lorne Forsyth, 57, New York State highway engineer, died Oct. 19 in Waddington, N. Y. He attended Clarkson College and in 1920 joined the department with which he had been associated ever since.

Charles Edward Deline, 87, a plasterer by trade who became one of the leading building contractors in Northern New York State, died Oct. 19 at Watertown, N. Y. He was founder of the Deline Construction Co. and was engaged for the last 60 years in erecting 21 schools and other large public buildings in that part of the state. He was active in the business until 1945 when he sold his interest to his son, Roland J. Deline.

Eugene Woodrow Cyrus, 33, civil engineer with the CAA at Seattle, Wash., and Mrs. Cyrus were killed Oct. 20 when their light plane crashed near The Dalles, Ore. Cyrus joined the CAA immediately following his graduation from Oregon State College two years ago.

George L. Christy, 83, former chief engineer of Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa., died Oct. 21. He was graduated from Iowa State College, Ames, Iowa, in 1891 and had been associated with the company since 1915.

Okonite gets contract for San Juan Islands cable

Under a contract awarded by the Bonneville Power Administration, the Okonite Co. of Passaic, N. J., will supply a 38,000-ft. submarine cable to carry power to the San Juan islands near Billingham, Wash., from the mainland near Anacortes.

The line, reportedly the longest high-voltage rubber-insulated submarine cable in the world, will be nearly 5 in. dia. and weigh 720,000 lb. It will be shipped in 10 gondola cars, locked together to prevent strain on the cable. Delivery is scheduled to start May 1 next year, with operation two months later.

Originally it was proposed to string overhead cables between some of the islands, over the narrower channels, but this plan was abandoned because of the danger to light planes which frequent the islands. Some engineers fear that submarine cables might have trouble in channels where the tide runs strong and boats sometimes drag anchors.

Morris 8" Electric-driven Dredge used for cleaning out reservoirs. Note compact design, sturdy proportions and neat appearance. Handles material at a total cost of less than 10 cents per cubic yard.

MORRIS *Hydraulic* **DREDGES**

Reduce Operating Costs

- The Morris Hydraulic Dredge cleans out reservoirs, improves shore lines, parks, lakes or land.
- Excavates silt, sand, clay, gravel and almost any material short of hard solid rock from a maximum depth of about 100 feet below the water surface.
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For more than 85 years, Morris Engineers have been building dredges for every kind of dredging operation. Write us today for a free copy of Bulletin 177...or ask for information concerning your specific requirements.

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MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
December Materials, and Labor Prices will appear in the December 7, 1950 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots incl. $1.00 per bbl. for bags, cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over.
	Cloth	Paper	Bulk	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand gray	Lt. wgt. agg.	50 c.y., del.
Atlanta	....	$3.63	$3.35	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.186	$0.186	$11.00
Baltimore	....	3.51	3.24	2.40‡a	2.40‡a	1.95‡a	2.60‡a	2.70‡a	2.45‡a	2.45‡a	.17	.17a	10.50
Birmingham	....	3.00	2.68	2.24	2.24	1.84	2.50	2.50	1.00	1.20	.145	.145	7.75
Boston	....	3.79	3.51	2.50a	2.50a	2.50a	1.60a	1.70a	....	....	.196	.205a	10.45h
Chicago	....	3.11	2.84/3.23	2.75‡b	2.75‡b	3.40‡b	2.75‡b	2.75‡b	2.00‡	2.00‡	.22	.22b	11.00
Cincinnati	....	3.46	3.18	2.60‡c	2.25‡c	1.90‡c	2.00‡h	2.00‡h	1.50	1.50	.19	.205	10.45f
Cleveland		N. A. in C. L.		1.90ef	1.65f	1.55	3.65‡a	3.65‡a	2.75‡	2.75‡	....	.23	13.00g
Dallas	$3.59	2.81	2.54	2.00	2.15	1.75	2.10	2.15	....	....	.089e	.125	9.30
Denver	....	3.74	3.49	1.85	2.00	1.15	....	....	....	....	.20	.23a	9.75
Detroit	....	3.10f	2.83	3.75‡b	3.75‡b	3.25‡b	3.60/3.75‡	3.60/3.75‡	3.75‡	3.75‡	.18	.19a	10.10f
Kansas City	....	3.25	2.98	1.90	1.90	1.50a	1.95a	1.95a	....	....	.175ag	.215e	10.40‡b
Los Angeles	....	3.72a	3.32a	2.05‡a	2.15‡a	1.90‡a	2.03‡a	2.03‡a	....	....	.11f	.215	10.15‡hm
Minneapolis	....	3.55ed	3.27ed	2.30‡ag	2.30‡ag	1.35‡ag	2.40‡ag	2.40‡ag	....	....	.23i	....	11.55fi
Montreal	....	2.66ac	2.51ac	.....	.....	1.90i	.85ij	1.10ij	....	....	.22	.20e	9.05ek
New Orleans	....	3.05e	2.70e	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.40
New York	....	3.61	3.34	2.35bk	2.35bk	1.45bk	2.35bl	2.35bl	....	....	....	....	11.15an
Philadelphia	4.05/4.35‡	3.25/3.55‡	2.97/3.27‡	2.58‡	2.65‡	2.05‡	2.00‡	2.05‡	1.75	1.65	.22/.25	....	11.15
Pittsburgh	3.90	3.18	2.85	2.05‡	2.05‡	2.00‡	2.50‡	2.50‡	2.05	2.05	.22d	.22d	11.00
St. Louis	....	3.14/3.25b	2.89/2.95b	2.55/2.60‡am	2.60‡am	2.15/2.60‡am	1.60j	1.60j	1.15	1.15	.215	.25en	10.15
San Francisco	....	3.39	2.99	1.86	1.86	1.96	1.96	....	....	....	....	.26c	10.75c
Seattle	....	3.55a	3.05a	2.75‡bm	2.75‡bm	2.75‡bm	3.50‡bm	3.50‡bm	....	....	.22j	.3135j	10.25j

‡ Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers' comm. not incl. *d* Dealers sell only LCL. *e* Plus switching charges. *f* Paying up to $3.80 for cement brought in from outside sources.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ¾". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots and. *l* F.o.b. scow Hudson river. *m* Less 2% for cash.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5½ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash *j* Less 1% for cash.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10-100 cu. brackets. *e* 2,000 lb. coner. *f* 2500 lb. comp. *g* Aver. haul 7–9 mi. zone. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, r.o. trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For cloth bags, add $1.05 per bbl.; 25¢ refund allowed for each returnable bag; for paper bags add 27¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.50†	Buffington, Ind.	$2.40	Steelton, Minn.	$2.50	Muskegon, Mich.	$2.60†	Toledo, O.	$2.50†
Clinchfield, Ga.	2.50†	Independence, Kan.	2.40	Leeds, Ala.	2.35	Saginaw, Mich.	2.45†	Milwaukee, Wis.	2.60†
Kingsport, Tenn.	2.50†	Hannibal, Mo.	2.45	Duluth, Minn.	2.50	W. yandotte, Mich.	2.50†	Green Bay, Wis.	2.60†
West Des Moines, Iowa	2.55†	Northampton, Pa.	2.50	Hudson, N. Y.	2.50	Buffalo, N. Y.	2.50†	Ironton, O.	2.50
Nazareth, Pa.	2.50†	Universal, Pa.	2.50	Alpena, Mich.	2.35†	Oswego, N. Y.	2.50†	Montreal City	2.31
Bath, Pa.	2.50†	Waco, Tex. (+ 10¢ tax)	2.40	Detroit, Mich.	2.50†	Cleveland, O.	2.50†	W. Winfield, Pa.	2.50†

† *Prices to hold for fourth quarter of 1950*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8¼ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	....	....	....	....	....	....	....	....	....
Baltimore	150.00‡	57.70‡	.....	$20.00	.....	$.0809	$0.14	$.08	$.16	$.08i	$.08	$0.11
Birmingham	.....	32.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	$35.50a	.1036a	.185a	.115aw	.205aw	.10a	.113a	.205a
Chicago	155.00‡a	90.00‡b	4.00/4.50‡f	20.25b	30.25b	19.25bw	29.25bw	.0875bw	.16w	.075b	.....	.....
Cincinnati	.....	.....	.....	21.50k	....	.095	.095	.095w	....	.....	.....	....
Cleveland	.....	51.00d	4.33g	24.00	36.00	24.00w	36.00w	.10w	.22w	.105	.11	25
Dallas	e	40.00	e	23.95	42.99	.1012	.1398	26.49	47.97	.0987	.1062	.1423
Denver	.....	48.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	88.00	.....	26.65	.....	12.00w	.....	.0976w	.....	.0971	.....	.197
Kansas City	e	e	e	18.55el	17.55	.....	.....	.0725ew	.075w	.0635e	.....	.....
Los Angeles	e	.....	e	14.00dm	.....	14.00fn	.....	15.50d	.....	14.00dn	.0775f	.1575f
Minneapolis	.....	.....	2.83A	26.00	36.50	24.50n	35.50n	24.50	35.50	.0925	.1225	.2225
Montreal	137.00	e	e	27.00n	36.65n	16.70nu	18.50nu	16.30nu	18.30nu	13.20ns	.184ns	.225ns
New Orleans	.....	.....	.....	16.50e	..... o	16.50ew	..... o	.08ew	..... o	.0775	.08	.1425t
New York	.....	.....	2.35f	23.50	25.80q	22.50r	41.88qr	.0940w	.1767qw	.0890	.0940	.1747q
Philadelphia	150.00	110.00	4.06	20.50	.....	19.50r	.....	.085w	.....	.....	.....	.....
Pittsburgh	165.00	42.00	4.50	22.00	35.00	10	20	27.00	39.00	.095	.09	.20
St. Louis	.....	.....	.....	19.25f		1633	.....	.0841w	.....	.15	.....	.....
San Francisco	.....	63.73e	.....	14.50q	30.00qp	14.50q4w	.....	16.50q	.....	.....	.08	.14
Seattle	.....	.....	.....	16.00A	36.50A	15.75hs	.....	18.00A	22.00hr	17.50hs	.08A	.09A

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6¢ treat. *g* 3". *h* 8¢ treat.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* Bulk refinery. *j* F.o.b. refinery, Englewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* Use of used drums *r* In customer's drums. *s* Shipped in drums, per drum. *t* 55-gal. drums. *u* Per 100 gal. *w* Per gal.

(Continued on page 73)

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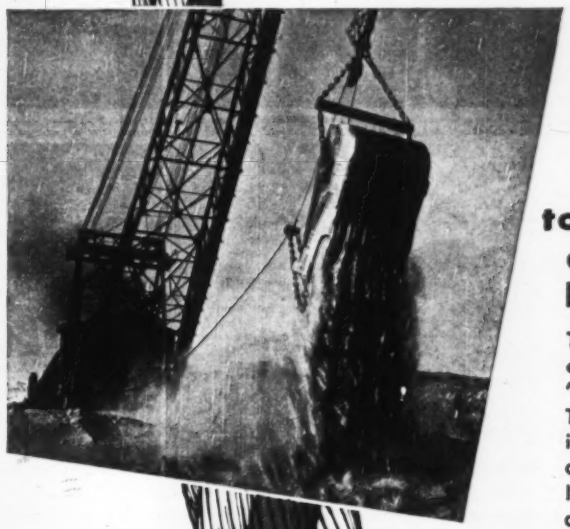
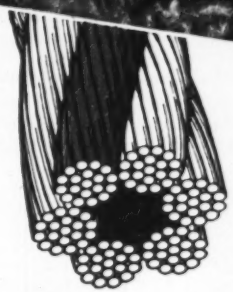
"HERCULES"
REG. U.S. PAT. OFF.

RED-STRAND
WIRE ROPE





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Its strength... its toughness... its unusual endurance – add up to longer wire rope life

These essential life factors are not a matter of chance. They are the result of combining "HERCULES" quality and PREFORMING. This is a winning combination as Preforming is the process that increases the life of a wire rope, by freeing it of internal stresses. It also makes a wire rope easier, quicker and safer to handle.

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ESTABLISHED 1857

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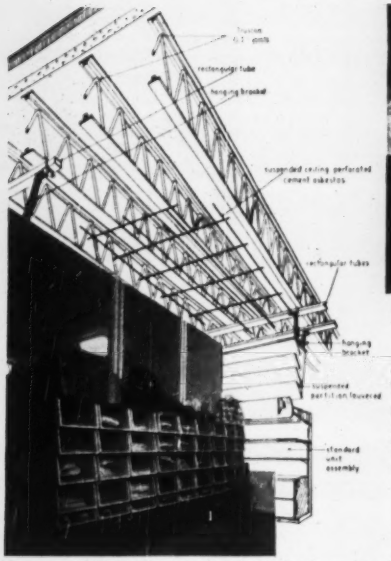
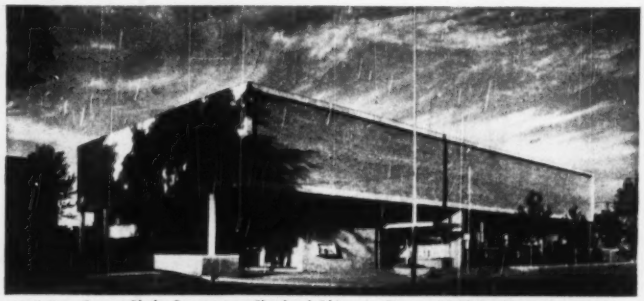
TRUSCON
MARK OF MERIT
PRODUCTS

TRUSCON "O-T" Open Truss STEEL JOISTS

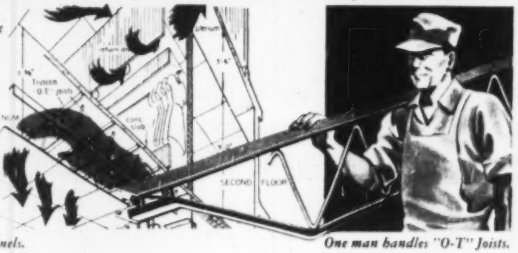
multiple purpose...





Halle Bros. Co. new Shaker Square store, Cleveland, Ohio, using Truscon "O-T" Steel Joists. Conrad, Hays, Simpson & Ruth, and Robert A. Little, Architects. Cleveland Construction Company, General Contractor

The details at right and left show how the architects used Truscon "O-T" Open Truss Steel Joists in the air-conditioning system of this building.



Space around "O-T" Joists is used as plenum chamber and faced with perforated panels.

One man handles "O-T" Joists.

for multiple economies

These strong, light joists are adaptable to all types of building construction . . . office buildings, industrial structures, schools, hospitals, apartments, residences, stores . . . bringing eight outstanding advantages to these structures. LIGHT WEIGHT permits quick, convenient handling and placement. ECONOMICAL through savings in supporting framework and foundations; speed of erection; insurance; maintenance. PIPE AND CONDUIT easily installed through open web. FIRE-RESISTANT because built of incombustible materials. VERMIN RESISTANT because steel is impregnable to insect and animal life. RADIANT HEATING possible through unobstructed flow of heat. SOUND-RESISTANT through dead air space and built-up materials. ALL-WEATHER CONSTRUCTION because these joists are not dependent on setting concrete. FACTORY-MARKED to fit construction plans. Write for free illustrated literature.

FREE Book on Truscon "O-T" Steel Joists. Write for it. The Truscon Steel Company Manufactures a Complete Line of Steel Windows and Mechanical Operators . . . Steel Joists . . . Metal Lath . . . Steel-deck Roofs . . . Reinforcing Steel . . . Industrial and Hangar Steel Doors . . . Bank Vault Reinforcing . . . Radio Towers . . . Bridge Floors.

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YOUNGSTOWN 1, OHIO
Warehouses and sales offices in principal cities

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES— PLATE	REINF. BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	*3.40	$3.45	$7.25	....	$68.00	$75.00	Not	$4.40	$5.60	$4.20	....
Chicago Area	3.40	3.45	7.25	$4.20	68.00	75.00	avail-	4.40	5.60	4.20	....
Pittsburgh Area	3.40	3.45	7.25	4.20	68.00	75.00	able	4.40	5.60	4.20	....
Buffalo Area	3.45	3.45	7.25	4.20	68.00	75.00	....	4.40	5.60	4.20	$8.85
Cleveland	....	....	7.25	....	.....	.....	....	....	....	....	8.85
Youngstown Area	....	3.45	....	....	.....	.....	....	....	5.60	....	....
Geneva	3.40	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	4.15	....	....	.....	.....	....	....	5.60	....	....
Pueblo	3.40	3.45	....	....	68.00	75.00	....	4.40	5.60	4.20	8.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price a: 5 tons to carload lot b New billet	Rail steel	Add'l for switch	$/cwt for Del.	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING d Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No 6 & 6 wires
Atlanta	$6.03	$5.85	$5.85	$.025	$.10	$31.50	$31.50			
Baltimore	6.09	5.09i	....	....	.10	40.00	43.00			
Birmingham	5.25	5.25	5.25	.05	.15	42.00p	44.50p			
Boston	5.75k	5.56k	5.56kz	....	.10/.15	32.00	34.50			
Chicago	5.25	4.50ff	4.50ff	.0625	....	32.00‡	34.50‡			
Cincinnati	5.79r	5.54r	....	....	....	34.00zee	36.50zee			
Cleveland	5.37	4.47v	....	....	.10	34.00‡	36.50‡			
Dallas	8.15	6.10	6.10	....	....	47.85	50.60			
Denver	6.65	6.75c	....	....	....	52.00s	62.00ya			
Detroit	5.64	5.59n	....	....	.10	38.00	49.00			
Kansas City	5.65nn	5.50e	....	....	....	35.50	38.00			
Los Angeles	5.90kk	5.70g	....	....	.15	44.50f	49.50kk			
Minneapolis	5.61kk	6.87ll	6.87ll	....	.15	34.00	36.50			
Montreal	6.75x	4.75x	4.75g	....	....	44.10h	46.80h			
New Orleans	....	5.40ok	....	.05	.10	38.50	41.00			
New York	5.75v	5.69	5.54	....	.20	35.50ot	38.00ot			
Philadelphia	5.45	5.60	....	....	....	35.50‡	38.00‡			
Pittsburgh	5.20/5.30	5.20/5.30	....	....	.10	32.50	34.00			
St. Louis	5.58	4.94c	4.94c	....	....	45.00aa	50.00aa			
San Francisco	6.30ri	5.75l	....	....	.15	40.00	42.50			
Seattle	4.05e	5.35el	....	....	....	52.00mmm	42.00mmx			

A P M * Joliet, Illinois, Donora, Penn., $2.46
F.o.b. Mill: Monessen, Penn., $2.60

A P M * Joliet, Illinois, Donora, Penn., $1.75
F.o.b. Mill: Monessen, Penn., $1.81

A P M * Joliet, Illinois, Donora, Penn., $2.58
F.o.b. Mill: Monessen, Penn., $2.66

* As Producing Mill.

‡ Delivered. *b* 1–5 tons, add 35¢. Less than 1 ton, add 50¢. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5–10 tons. *o* 5 to 15 tons base. *p* Del. of 5000 sq. yd. or less. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢, ¾ in., ½ in., 15¢, ⅞ in., 25¢, ¾ in. 50¢, ⅝ in. 80¢, ½ in. $1.90. *v* 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $0.00333 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales tax. *hh* 10,000–19,999 lbs. *ii* Rolled at Geneva mill. 100–3999 lbs. *kk* 4" ribbed. *ll* 5 to 8 tons. *mm* 2", off for cash. *nn* 10 tons or over.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. a	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$93.00	$0.43	$0.67	$3.39	$7.00	$114.00	$140.00	$0.45	$2.00
Baltimore	97.36	.511	.9855	4.05	10.865	168.60	260.40	.85	2.35
Birmingham	86.00	.40	.72	2.84	....	210.00‡	375.00‡	.90	2.50
Boston	105.96	.415uez	.8647uey	3.78uey	10.50uey	181.65z	280.98z	1.45‡mg	3.60‡mg
Chicago	99.99	.60	1.15	4.50	13.25	150.00‡	270.00‡	.80	2.80
Cincinnati	98.00	.476	.918	3.87	10.25	148.80‡	230.70‡	.70m	2.60m
Cleveland	100.63	.434z	.837z	3.51z	9.635z	147.00	229.00	.72m	2.75m
Dallas	102.78	.436	.822	3.234	9.17	.....	.....	.49	1.60
Denver	107.86	.436dd	.744dd	3.186dd	....	.....	.....	.744dd	2.566dd
Detroit	95.63	.66	1.30	5.10	13.90	240.00m	360.00m	.75	3.00
Kansas City	101.91	.47m	.84m	3.35	....	215.00	.....	.70	3.00
Los Angeles	114.56	.503l	.996l	4.871l	12.145l	212.30	324.60	.79	2.25ff
Minneapolis	94.86–104.17	.62mo	1.12mo	4.55mo	....	.....	.....	1.355h	3.85h
Montreal	90.00	.77x	1.35x	4.47x	7.23ez	.....	.....	72.00‡aa	218.00‡4aa
New Orleans	96.18	.453	.82	4.41	8.85*	235.00bb	412.00bb	.63	2.29
New York	101.30–106	.68	1.17	4.69	12.42	.....	.....	1.00	2.50
Philadelphia	93.97	.60	1.10	4.33	12.56	270.00‡	330.00‡	1.35h	3.60h
Pittsburgh	101.26	.36m	.70m	2.70m	9.625m	147.50	230.00	1.05h	2.50y
St. Louis	97.77	.51	.92	3.80	9.00	.....	.....	1.10il	2.45hl
San Francisco	114.56	.55d	1.08d	4.68d	11.70d	195.00ll	325.00ll	.69	2.85
Seattle	116.45	.516	.916	....	....	150.00c	.....	.80ee	2.40ee

‡ Delivered. *a* B. & S. class B and heavier. CL, Burlington, N. J. (base) $87.50. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $5 per ton additional. 30 in. and larger, usually $1 per ton less. *b* Extra strength ASTM C 200-44T. *c* 4-in. $90. *d* SS361-A. *e* 30 in. *g* Culvert pipe. Reinforced, ASTM C76-41. *h* Reinforced. ASTM C75-41. *i* Reinforced. ASTM C76-37. *j* Centrispun. *k* Per 100 ft. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *t* Within switching limits. *u* ASTM C13-40. *v* F.o.b. city. *z* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60-1941 specifications used. *aa* No standard specification in Can. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL, delivered f.o.b. truck. *ee* 1½ off for cash. * Not stocked, only made to order. *ff* 21".

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ⅛ in., 5¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 25¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base: *Butt Weld* — 1 in. and 1¼ in. black, + 10.5, galv. + 38.5; 1½ in. black, 4.5, galv. + 35.0; 2 in. black, 4 galv. + 34.5. *Lap Weld* — 2½ in. to 3½ in. black + 11, galv. + 38.0; 4½ in. to 8 in. black — 8, galv. + 33.5. Freight rates to destination to be added to name delivered price.

*WROUGHT STEEL PIPE (Full standard weight)

Mill	3½ to 6 in. Lap Weld† Galv. %	Black %	2½ & 3 in. Butt Weld† Galv. %	Black %
Lorain, Ohio	22 0a	43 0a	27 0	43 0a
Aliquippa, Pa.	22 0a	43 0	27 0	43 0a
Spartrance Pt., Md	22 0a	42 0a	28 5	42 0a
Benwood, W. Va.	23 5c	42 0c	30 0	42 0c
Youngstown, O.	21 5	40 0	30 0	40 0
Indiana Harbor, Ind.	....	....	29 0	....
Sharon, Pa	22 0a	43 0a	27 0	43 0a
Wheatland, Pa.	22 0a	42 0a	28 5	42 0a
Etna, Pa.	22 0a	42 0a	28 5b	42 0a
Fountain, Calif.	12 5ab	31 0ab	19 0b	31 0ab

† Threaded and coupled. *a* 3½ to 4 in. *b* Continuous weld. *c* 5 and 6 in.

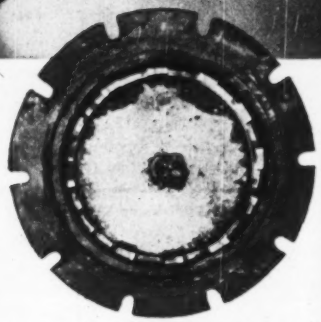
It's easy to tap!

LOCK JOINT
CONCRETE PRESSURE PIPE

Lock Joint Pressure Pipe of any design may be tapped easily and economically for the purpose of establishing either large connections or small service outlets. With the aid of a few simple instructions, any experienced service crew can apply the modern tapping technique which permits the making of connections in concrete pressure pipe while the line continues to operate under pressure.

Although, for many years, taps have been made successfully in concrete pressure pipe, today's efficient equipment and modern methods now make it possible to tap Lock Joint Concrete Pressure Pipe with even greater economy of time, money and effort, and without sacrificing strength.

At your request we would be glad to send you our booklet outlining the simple steps required in making a pressure tap in Lock Joint Concrete Pressure Pipe.



LARGE PHOTO: Tapping a 16" outlet in a 36" pipe at Wayne County, Michigan.

SMALL PHOTO: The pilot drill of the tapping machine withdraws the concrete core, making a clean cut, and leaving no obstruction within the pipe line.

Lock Joint Pipe Company for over forty years has specialized exclusively in the manufacture of reinforced concrete pipe for water supply and transmission mains as well as for sewers, culverts and subaqueous installations.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. Oklahoma City, Okla. • Tulsa, Okla.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face) **LONG LEAF Y. P.** **PLYWOOD**

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft. Merchantable grade up to 20 ft. Rail freight increment (See note for base price)

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	2x12 Rgh	12x12 Rgh	¼"	¾"
Atlanta	† **$75 00**	**$78 00**	**$67 50**	**$69 50**	**$74 00**	**$78 00**	**$77 50**	.....	.....			$22.32	$27.24
Baltimore	* **102 50**	**102 50**	**100 00**	**102 50**	**102 50**	**100 00**	**100 00**	.....	.....	**$142 50**	**$147 50**	22.86	27.90
	110 00g	*110 00g*	*110 00g*	*110 00g*	*100 00g*	*100 00g*	*107.50*	*$107.50*	*$107.50*				
Birmingham	† **83 00**	**85 00**	**85 00**	**80 00**	**85 00**	**85 00**	**85 00**	.....	.....	**115 00**	**125 00**	21.78	26.58
	80 00	*80 00*	*78 00*	*77.50*	*77.50*	*80 00*	*81 00*	*81 00*	*81 00*				
Boston	* **95 00**	**95 100**	**100 00**	**100 00**	**100 00**	**104 00**	.....	.....	.....	**128 00**	**128 00**	22.86	27.90
	122 00	*104 00*	*119 00*	*124 00*	*124 00*	*124 00*	*124 00*	*124 00*	*124 00*				
Chicago	**100 103	**102 104**	**101 102**	**112 00**	**112 00**	**114 00**	**115 00**	.....	.....	**155 00**	**155 00**	18.72	22.80
	100 103	*103 104*	*119 120*	*120 00*	*120 00*	*121 00*	*121 00*	*120 00*	*120 00*	.....	.....		
Cincinnati	* **110 00**	**113 00**	**95 102 50**	**100 00**	**108 00**	**115 00**	**115 00**	.....	.....	.....	.....	21.78	26.58
	108 00	*108 00*	*108 00*	*108 00*	*108 00*	*108 00*	*108 00*	*170 00*	*170 00*	.....	.....		
Cleveland	** **95 00**	**97 00**	**85 75**	**93 00**	**95 00**	**95 00**	*107 00*	*107 00*	*107 00*	.....	.....	22.20	27.12
Dallas	*k*† **78 00**	**80 00**	**69 00**	**58 00**	**59 00**	**59 00**	**98 00**	.....	.....	**104 00**	**98 00**	18.72	22.80
Denver	* *Not in stock*		*117 00*	*117.00*	*117 00*	*119 00*	*128 00*	*148 00*	*146 00*	.....	.....	13.92	16.98
Detroit	‡ **108 00**	**110 00**	**98 00**	**98 00**	**110 00**	**115 00**	.....	.....	.....	.....	.....	21.78	26.58
	89 00	*89 00*	*85 00*	*85 00*	*85 00*	*85 00*	*90 00*	*95 00*	*100 00*	.....	.....		
Kansas City	* **125 00**	**147 00**	**132 00**	**129 00**	**133 00**	**135 00**	.....	.....	.....	.....	.....	16.56	20.16
	119 00	*145 00*	*134.50*	*129 00*	*134.50*	*137 00*	*140 00*	*145 00*	*145 00*	.....	.....		
Los Angeles	*l* **108 00**	**108 00**	**108 00**	**107 00**	**106 00**	**106 00**	**120 00**	**155 00**	**120 00**	.....	.....	13.38*ab*	16.26*ab*
Minneapolis	*é* **135 00**	**135 00**	**140 00**	**140 00**	**140 00**	**140 00**	**150 00**	**150 00**	**150 00**	.....	.....	16.56	20.16
Montreal	*ab* 75.00	79.00	75.00	77.00	80.00	89.00	.....	.....	.....	.....	.....	.....	.....
	160.00	*160.00*	*160.00*	*160.00*	*160.00*	*165.00*	.....	*165.00*	.....	.....	.....	.....	.....
New Orleans	† **80 00**	**83 00**	**79 00**	**80 00**	**83 00**	**85 00**	**100 00**	.....	.....	**135 00**	**135 00**	18.72	22.80
	† *78.00*	*78.00*	*80.00*	*80.00*	*80.00*	*77.50*	*77.00*	*76.00*	*70.00*	**210 240***f*	**210 240***f*	22.86	27.90
New York	‡ **110/120**	**114 124**	**105/115**	**115/125**	**120/130**	**125/135**	**145 160**	.....	.....	.....	.....	.....	.....
				Range from $115.00 to $125.00			*150 140*	*155/145*	*155/145*	.....	.....	.....	.....
New York	** **93 00**	**96 00**	**77 00**	**90 00**	**94 00**	**97 00**	**109 00**	.....	.....	.....	.....	.....	.....
	112.00	*112.00*	*100 00*	*100 00*	*100 00*	*100 00*	*120 00*	*120 00*	*120 00*	.....	.....	.....	.....
Philadelphia			**Range from $117.00 to $127.00**				**117 127**	.....	.....	**190 200**	**190 200**	22.86	27.90
			Range from $150.00 to $140.00				*150 140*	*140 150*	*140 150*				
Pittsburgh	†		**Range from $80.00 to $90.00**			**90 100**	**95 105**	.....	.....	**95 100**	**110 120**	22.56	27.48
			Range from $95.00 to $100.00			*95 105*	*110 120*	*95 105*	*110 120*	.....	.....		
St. Louis	*fc* **115.00**	**117.25**	**104.25***i*	**109.75***i*	**118.50***e*	**126.75***i*	.....	.....	.....	.....	.....	18.72	22.80
			186.00e	*125.50e*	*125.50e*	*125.50e*	*143.50e*	*144.75*	*144.75*	.....	.....		
San Francisco	*A*† *83/85*	*83/85*	*89/95*	*89/95*	*89 00*	*89 00*	*80/85*	*80/85*	*80/85*	.....	.....	10.08*a*	12.30*a*
Seattle	† *82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	.....	.....		

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. ♯ Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *h* 8 ft. lengths. *k* No. 3 common

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail $12.00 by truck to yard with surfaced stock $2.00 to $3.00 less.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $200.00; on ¾", $225.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS — Discounts from jobbers list, Feb. 1, 1950*a* — Single or Double Thickness — A quality	B quality	EXPLOSIVES — Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	76%*e*	76%*e*	$0.2175
Baltimore	80–10%	82–10%	.2175
Birmingham	83%	83%	.1650
Boston	83%	83%	.2175
Chicago	80%*f*	80%*f*	.2175
Cincinnati	80%*f*	80%*f*	.2175
Cleveland	80–10–10%*f*	80–10–10–10%*f*	.2375
Dallas	75%	75%	.2250
Denver	83–5%	83–5%	.2225
Detroit	80–10–10%*f*	80–10–10%*f*	.2175
Kansas City	81–10–10%*f*	81–10–10%*f*	.2225
Los Angeles	77%*f*	81%*f*	.22
Minneapolis	80–10%	80–10%	.2225
Montreal	40–5%*bc*	40–10–5%*bc*	19.15*bc*
New Orleans	83%	83%	.2225
New York	83%*f*	83%*f*	.37*g*
Philadelphia	80%	82%*g*	.2175
Pittsburgh	82%*g*	82%*g*	.19
St. Louis	70–10%*e*	70–10%*e*	.2225
San Francisco	66%*e*	73%*e*	.2175
Seattle	52%*e*	53%*e*	.22

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass; a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Sept. 1939, sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *e* Discount from list of Jan. 16, 1946. *f* Disc from Oct. 1950.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $20.90. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.165	$0.1975	$0.2175
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.17 – .1775	.2025– .21	.2225– .23
Rocky Mtn. States	.17 – .1825	.2025– .21	.2225– .235
Pacific N. W. States	.1675– .18	.20 – .2125	.22 – .2325
Pacific S. W. States	.165 – .1725	.1975– .20	.2175– .2225

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail — Pine*	Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	....
12-in. — 2-ft. from butt	6-in.	50 to 59-ft.	.46	....
12-in. — 2-ft. from butt	6-in.	60 to 69-ft.	.50	....
12-in. — 2-ft. from butt	6-in.	90 to 100-ft.	....	.79
13-in. — 3-ft. from butt	5-in.	91 to 100-ft.	....	.80
14-in. — 2-ft. from butt	6-in.	50 to 69-ft.	.50	.87
14-in. — 2-ft. from butt	6-in.	70 to 79-ft.	.54	.81
14-in. — 2-ft. from butt	5-in.	80 to 85-ft.	.67	.82
14-in. — 2-ft. from butt	5-in.	85 to 89-ft.	....	.83
14-in. — 2-ft. from butt	5-in.	90 to 100-ft.	....	.87

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	*i*			
	Pine	*i*			
New York	S. L. Sap Pine	$1.65	$3.00	$2.25	$3.40
	Mixed Oak	2.00	3.20	2.50	3.70
Birmingham	Hardwood	1.00	1.60*c*		2.25*c*
Chicago	Red Oak		2.80/2.85*a*		3.70/3.75*a*
Los Angeles	Douglas Fir				
	Redwood				
Philadelphia	† Red Oak	2.15/2.33	3.10/3.13*a*	3.00/3.10	4.15/4.25*a*
St. Louis	White Oak	2.70		3.45	
	Red Oak	2.65	3.35*a*	3.40	4.30*a*
	Sap Pine or Cypress	3.20*a*		4.05	
San Francisco	Douglas Fir	1.28*e*	2.24*ef*	1.70*ef*	3.05*caf*
Montreal	Birch or Maple	*h*	*h*	*h*	*h*

Tr.—Treated; Untr.—Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *c* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.00
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.00
Soda ash, 58%, in paper bags, per 100 lb. dense	1.60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE — PARTITION — SCORED			STRUCTURAL CLAY TILE — LOAD BEARING — SCORED			BRICK		LIME		
	Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	Per M. in quantity Common backing	Straight hard	Per ton, In paper. Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	.....	.....	.....	.....	.....	.....	$26.75	$26.75	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$325.00	$380.00	.....	.....	36.00*k*	41.00*k*	26.00	20.00	.....
Birmingham	97.50	104.00	195.00	231.00	.....	.....	29.00*ff*	22.50*gg*	24.74	16.30	.....
Boston	149.00*k*	161.50*k*	298.00*k*	358.00*k*	.....	.....	32.00*k*	35.00*k*	32.30*ll*	27.90*ll*	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	21.00	23.00	30.80	24.50	.....
Cincinnati	170.00*j*	180.00*j*	330.00*jdd*	278.00*j*	$355.00	$405.00	34.50*j*	44.25*j*	26.00*jj*	24.25*jj*	24.25
Cleveland	118.00*c*	126.00*c*	236.00*cc*	.....	.....	.....	30.00	30.00	25.50	23.50	29.90*cc*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	33.25	31.90	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	117.08	124.88	234.15	.....	290.68	332.20	33.50*cc*	32.00*cc*	30.00	30.00	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	26.00*o*	39.50*o*	28.50*p*	22.50*p*	25.00*p*
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	20.00‡	.....	36.00	36.00	32.00
Minneapolis	165.00*p*	185.00*p*	373.00*p*	185.00*wp*	.....	.....	32.00*p*	36.00	37.00*bbe*	26.00*bbe*	37.00*bbde*
Montreal	143.00*aq*	157.00*aq*	292.00*aq*	.....	.....	.....	26.50	36.50	29.00*a*	.....	.....
New Orleans	160.00	160.00	300.00	.....	.....	.....	29.00	.....	38.00	26.00	37.50
New York	121.66*bb*	129.70*bb*	178.36*eh*	194.66*hh*	.....	.....	35.00	.....	36.00	28.00	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	29.00	32.00	33.00	21.50	26.50
Pittsburgh	112.00	117.00	180.00	216.00	279.00	317.00	32.00	37.00*y*	24.00	22.00	2.97*m*
St. Louis	129.00	135.00	180.00	252.00	339.00	.....	37.00*bd*	34.00*bd*	85.90*aaap*	65.70*aaap*	1.00*aaspec*
San Francisco	132.00*a*	148.50*a*	198.00*dda*	148.50*ba*	.....	.....	33.00	.....	25.30	25.30	2.49*m*
Seattle	150.00*cc*	160.00*cc*	.....	160.00*ccw*	.....	.....	32.00*a*	39.00*a*	37.50*ahh*	37.50*ahh*	3.90*mhh*

‡ F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 12 in.-3 cell. *d* Pulverized hot. *e* 5% 10th following month. *g* 5¼ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *i* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. plant.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD	WHITE LEAD	READY-MIXED PAINT			ROOFING SUPPLIES Carload lots f.o.b. factory				
	Per 100 lb. in 600-lb. (Approx.) Dry *a*	bbl. Per 100 lb. in 100 lb. cases in oil *w*	Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$19.00	$29.725	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	18.75	29.35	2.35	4.10	3.10	3.40	4.00	4.00	.42	36.00
Birmingham	19.00	29.725	3.90	3.40	.....	2.80	2.75	2.75	.....	40.50*ee*
Boston	18.75	29.35	.....	.....	.....	2.81*h*	2.53½*q*	2.81½*q*	.38	42.00
Chicago	18.75	29.35	.....	.....	.....	2.73½*u*	2.79½*o*	2.79½*o*	38.00‡*bbr*	40.00‡
Cincinnati	18.75	29.35	2.90	2.90	.....	3.02‡	2.98‡*o*	2.98	.57*uj*	.....
Cleveland	18.75	29.35	2.50*pgg*	2.75*agg*	2.35	2.35	2.40*o*	2.40*o*	.30*g*	35.00
Dallas	19.00	30.10	.....	4.05	.....	3.50*kq*	3.75*o*	4.35*o*	.36	46.00
Denver	19.25	29.85	2.82	4.50	2.63	3.20*o*	2.57*o*	2.57*o*	.41*ff*	40.00
Detroit	18.75	29.35	2.35	3.30	2.50	2.35	2.40*f*	2.40	.51	37.00
Kansas City	18.75	29.47	.....	2.46	2.50	2.24	3.33	3.33	.301	44.20
Los Angeles	18.75	29.60	3.05	4.00	3.75	2.48	1.68*ss*‡	.37	.37	*f*
Minneapolis	18.75	29.47 28.55	.....	.....	.....	2.50*kkd*	2.50*kkd*	2.50*kkd*	.34*kkd*	37.00*v*
Montreal	.....	20.70	3.75*t*	4.20*t*	4.62*t*	3.50*t*	3.25*tf*	3.25*tf*	1.01*t*	2.90*kt*
New York	18.75	29.35	3.45*y*	.....	.....	2.50	2.50*o*	2.50*o*	.34*z*	37.00
Philadelphia	18.75	29.35	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	18.75	29.35	2.20	2.25	2.00	2.85	2.85*o*	2.85*o*	.37	40.00
St. Louis	18.75	29.35	.....	.....	.....	2.25	2.40*h*	2.40*h*	.35	38.00
San Francisco	18.75	29.60	1.80	2.75*n*	1.35	2.27	3.30*aa*	.....	.38	.....
Seattle	18.75	29.85	2.51*m*	2.67*m*	.....	3.26*mqee*	2.78*kmee*	.....	.59*mee*	48.75*jme*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* May. 1941 price. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* ASTM Spec. D266-41. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Brick-layers	Car-penters	Struct. Iron Workers	Hoisting Engineers	Plas-terers	Electrical Workers	Steam-fitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.50	$1.85	$2.25	$2.125	$2.375	$2.25	$2.00	$1.00	$1.05
Baltimore	3.00	2.35	2.65	2.60 2.80	2.50	2.50	2.50	1.35	1.35
Birmingham	2.75	2.035	2.30	1.975	2.30	2.375	2.45	1.10	1.20
Boston	2.775	2.375	2.55	2.60	2.85	2.60	2.45	1.75	1.75
Chicago	2.625*k*	2.55	2.60	2.50	2.85*n*	2.71*n*	2.60	1.90*m*	1.90*m*
Cincinnati	2.70	2.25	2.425	1.675 2.675	2.50	2.55	2.55	1.65	1.65
Cleveland	2.70	2.70*r*	2.70	2.70	2.70	2.70	2.70	1.975	1.85
Dallas	2.50*s*	1.725	2.25	2.25	2.50*t*	2.375	2.375	1.075	1.273 1.50
Denver	3.00	2.35	2.20	2.35	3.10	2.50	2.40	1.50	1.50
Detroit	2.85	2.60	2.80	2.80	2.90*d*	2.85	2.725	1.90	1.90
Kansas City	2.675	2.225	2.375	1.725 2.475	2.825	2.50	2.625	1.65	1.65
Los Angeles	2.75	2.20	2.50	2.15	3.125	2.50	2.50	1.65	1.65
Minneapolis	2.40	2.12	2.275	2.07	2.50	2.41*n*	2.435	1.52	1.52
New Orleans	2.60	1.975	2.35	2.225	2.275	2.40	2.35	1.10	1.10
New York	3.548*r*	3.096*b*	3.348*b*	3.348*b*	3.599*ar*	3.18*ar*	3.280*gg*	1.90	1.90
Philadelphia	3.31*n*	2.525	2.80*g*	2.50	3.075*k*	3.03.3.283*n*	2.825*k*	1.475	1.775
Pittsburgh	3.00	2.65	2.625	2.80	2.625	2.625	2.80	1.60	1.60
St. Louis	3.00*e*	2.500	2.50	2.55	2.75	2.675*e*	2.625	1.65	1.60 1.75
San Francisco	3.00*a*	2.375	2.50	2.19	3.00	2.625	2.50	1.55	1.55
Seattle	3.00	2.105	2.505	2.33	3.00	2.50	2.50	1.795	1.85
Montreal*	1.60	1.40	1.50	1.30	1.60	1.50	1.55	1.00	.85

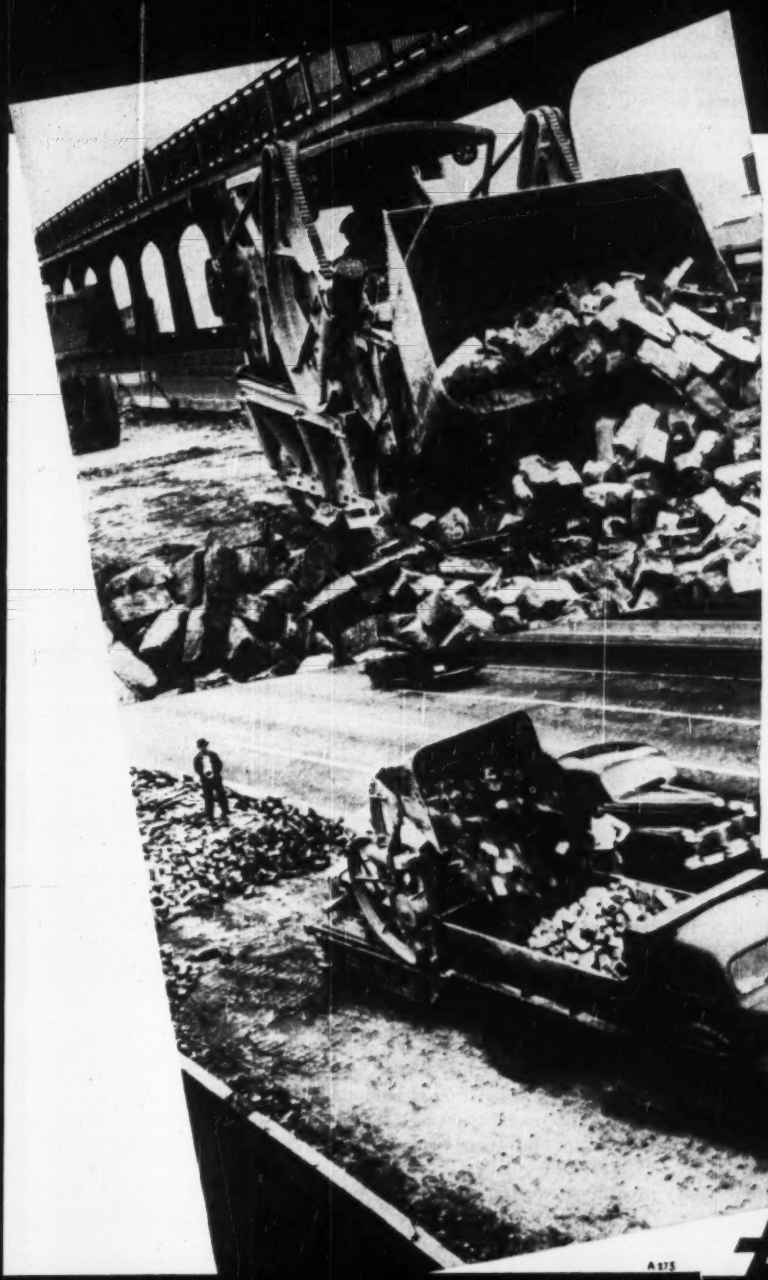
a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 2% for electricians. * Cost of living bonus now included in basic wage. *e* Includes 5¢ per hr. tool replacement. *f* Plus $5.00 daily bonus. *g* $2.20 homes and housing. *h* 3¢ vacation fund. *i* Incl. 2% welfare. *j* Incl. 9¢ hr. welfare. *k* Incl 7½ *c* hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5¢ hr. welfare ins. fund. *n* Incl. 6¢ hr. welfare fund. *o* Incl. 3% welfare fund. *p* Incl. 3% welfare fund and 3% pension fund. *r* Incl. 3% welfare fund and 20¢ pension fund. *s* Incl. 3% welfare fund and 3% vacation fund. *t* Incl. 3% pension fund. *u* Incl. 1% welfare fund.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Sept. '50	Oct. '50
Common Wages—Building (8 hr. day)	av. per hr.	.53	.53
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.69	.69
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.88	1.88
Bricklayers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Steel Shapes 3"-15" x 12 meters	per ton	1,008.30	1,008.30
Reinf. Steel, Corr. Rods ⅜" x 11 meters	per ton	1,148.30	1,148.30
½" x 11 meters	per ton	1,138.30	1,138.30
⅝" x 11 meters	per ton	1,128.30	1,128.30
¾" x 11 meters	per ton	1,108.30	1,108.30
⅞" x 11 meters	per ton	1,118.30	1,118.30
1" x 11 meters	per ton	1,118.30	1,118.30
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	36.00	36.00
Rose Gravel	per tr. load	34.00	34.00
Cement, Std. Port. (Tolteca)	per ton	125.00	125.00
Lumber			
Mex. Sawed Fir (Oyamel)	per M ft.	750.00	750.00
1st Class Pine	per M ft.	1000.00	1000.00
2nd Class Pine	per M ft.	900.00	900.00

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.571. **ENR Common Average:** $1.574.

HIGHWAY RESURFACING WITH EIMCOS



Loading brick surfacing material on the Delaware River Bridge between Philadelphia and Camden was done quickly and efficiently with an Eimco 104 RockerShovel.

This job had to be done without interrupting traffic and without spilling blocks into the paths of the passing vehicles.

The 104 works efficiently in narrow passages because it does not have to turn around to dump. The bucket rolls overhead to discharge the material into the truck.

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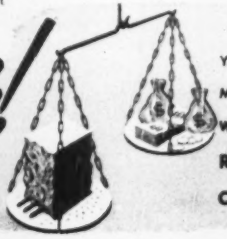

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Ill., Springfield—B. A. 11/14—City Council, at office Mayor Harr A. Eielson, auxiliary water supply trunk (Div. 1). Plans deposit $25. Crawford, Murphys & Tilly, 400½ E. Adams St., consult. engrs.

S. C., Ridge Spring—B.A. 11/15—Town, WW imprvs. Approx. $50,000. Plans deposit $10. Barber, Keels & Assoc., 1307 Marion St., Columbia, engrs. CD 4/16/46.

Pa., Chester—B.A. 11/16—Clarence L. Conner, executive mgr., Chester Municipal Auth., 5 and Welsh Sts., Contr. 20, two 119 ft. inside diam. pre-stressed concrete water storage reservoirs, incl. misc. piping, connections, appurtenances at Oxford Summit; Contr. 21, two 205 ft. inside diam. (Alt. 1) or three 205 ft. inside diam. (Alt. 2) or four 205 inside diam. (Alt. 3) pre-stressed concrete water storage reservoirs, chlorination and meter bldg., etc. at Village Green; Contr. 22, piping, alterations to existing piping addns., alterations to Gate House and effluent flume at existing Harrison Hill Reservoir. Plans deposit $30. Albright & Friel, Inc., 121 S. Broad St., Phila., consult. engr.

Mich., Royal Oak—B.A. 11/20—City, City Hall, Contr. 50 T 1, constr. 28,200 lin. ft. 6- to 30-in. water mains, valves, hydrants, appurtenances. Plans deposit $25 refundable. Water Engineer, 602 Lloyd Ave., engr. CD 2/17/44.

Tex., Sweetwater—B.A. 11/20—City, 30 mi. 20 in. welded joint water supply line, appurtenances. $600,000. Plans deposit $25. Freese & Nichols, 407 Daniger Bldg., Fort Worth, engrs. CD 4/8/49.

Ga., Manchester—B.A. 11/21—City, WW imprvs. Over $28,000. Wiedeman & Singleton, P.O. Box 1878, Atlanta, Ga., engrs.

LOW BIDDERS

Ky., Campbellsville—City, Oct. 10, water sys. imprvs. addn., Contr. 11, from E. N. Murray Co., Buena Vista, Ga., $72,697. CD 10/11.

† **La., Jonesville**—U. S. Eng., Box 60, Vicksburg, Miss., Oct. 24, constr. Jonesville Pump. Station, Inv. 51-43, from Gravier & Harper, Box 1391, Alexandria, $156,969. CD 9/28.

Tex., Austin—Bd. Regents, University of Texas, University Administration Bldg., Oct. 24, c.i. water lines, from Joe Bland Constr. Co., Box 1158, $33,116. CD 10/2.

CONTRACTS AWARDED

Okla., Oklahoma City—City, City Hall, water main relocation at 53 and Western Underpass, to Paul H. Nunn, 5100 Belle Isle Blvd., Oklahoma City, Okla., $29,600. Est. $30,000. Awarded 10/25. CD 5/15.

Tex., Houston—S. N. Adams & Co., 4001 Westheimer Rd., water lines, facilities, in new area Drexel and Westheimer. Owner builds, $37,500. CD 1/12.

Tex., Houston—Jno. A. Lomaz Jr. & M. Frost Jr., N. Esperson Bldg., water lines. Owner builds. $37,500.

Que., Montreal—Municipality, feeder mains between MacTavish Station and Outremont Reservoir, to Spino Constr. Co. Ltd., 10158 St. Lawrence St., $812,267. Bids 10/21. CD 10/6.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Ga., Blackshear—B.A. 11/14—City sanitary sewer imprvs., incl. approx. 25,000 ft. 6-to 10-in. pipe. Plans deposit $15. Thomas & Hutton, 204 E. Bay St., Savannah, engrs.

▲ **Ill., East St. Louis**—B. A. 11/15—City, John T. Connors, mayor, City Hall, Missouri Ave. at Main St., trunk and lateral sanitary sewers, incl. Sect. 1, Trunk B, 8,140 lin. ft. rein.-con. box sewer from 8x10 to 11x12½ ft. and 3,100 lin. ft. 72 in. and less, appurtenances, etc.; Sect. 2, Trunk A, 5,800 lin. ft. rein.-con. box 6x7 ft. to 9x10½ ft., etc.; Sect. 3, A, laterals, 3,790 ft. 6 ft. 6 in. x 8 ft. 4 in., rein.-con. box 8x10½ ft. and 30,000 lin. ft. 8- to 78-in. sewers; Sect. 5C trunk, incl. 6,360 ft. rein.-con. box 6x7 ft. to 8x10 ft.; Sect. 6 C, laterals, 7,725 ft. 8- to 72-in. sewers; Sect. 7 E, 6,900 lin. ft. rein.-con. box 6x7 ft., to 7x9 ft. and 39,000 lin. ft. 8- to 78-in. sewers; Sect. 8, Edgemont and Oak Park and Lansdown Districts, 180,000 lin. ft. overall 6- to 36-in. sewers lift station etc. $7,000,000. Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis 3, Mo., engrs. CD 9/11.

S. C., Florence—B. A. 11/15—City, sewage disposal plant. Approx. $50,000. Harwood Beebe Co., Montgomery Bldg., Spartanburg, engr.

Va., Hanover—B.A. 11/15—At office E. R. McKesson, chief Bureau Engineering & Production, Welfare and Institutions Bldg., 429 S. Belvedere St., Richmond, sewage treatment plant, intercepting sanitary sewers outside electric lines and ground lighting sys., for Hanover Industrial School. Plans deposit $15. Extended date. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engrs. CD 10/13.

N. Y., Irondequoit—B.A. 11/16—Town Bd. at office Fred E. Hussey, clk., 1280 Titus Ave., Rochester, Zone 9, general constr., heating and ventilating, plumbing and electrical work for sewage treatment plant in North East Sanitary Sewer Dist. Plans deposit $50. Ginnity & Morrison, 39 State St., Rochester, Zone 14, engrs.

▲ **Ill., East St. Louis**—B. A. 11/17—East Side Levee & Sanitary Dist., Dan Foley, pres., 2642 McCasland Ave., trunk relief sewers, Proj. 18, Sects. A, B and C, incl. Sect. A, Mississippi River-to gate structure, 5,250 lin. ft. 12½x12½ ft., rein.-con. box and 470 lin. ft. 9x10½ ft. rein.-con. box; Sect. B, from gate structure at Gay Ave. to 13 and Illinois Ave., 7,000 lin. ft. 12½x12½ ft. rein.-con. box and Sect. C, 13 and Illinois Ave., to 20 and Illinois Ave. to junction with 42-in. station 72/10 incl. 4226 ft., 12½x12½ ft., rein.-con. box and 2,915 lin. ft. 11x12 ft., rein.-con. box sewers, together with appurtenances, etc., in each section. $4,000,000. Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis, 3, Mo., engrs. CD 9/11.

N. C., Albemarle—B.A. 11/17—Town, George S. Moore, supt. Pub. Utilities, Albemarle, sanitary sewerage sys. imprvs., 8 mi. 6 in. pipe lines. Plans deposit $10.

Fla., Gainesville—B.A. 11/20—City, Part A, sewage treatment plant; Part B, lift station; Part C, gravity sewer lines; Part D, pressure sewer lines. Plans deposit $25. Smith & Gillespie, P. O. Box 1048, Jacksonville, engrs. CD 1/6.

Wis., Wauwatosa—B.A. 11/20—Metropolitan Sewerage Comn. of Milwaukee Co., Milwaukee, Zone 1, main sanitary sewer in N. 72, W. Clarke, N. 73, W. Center and N. 75 Sts., 3985 ft. 12-to 21-in. vitr. clay pipe, 79 vert. ft. standard manhole, 98 ft. drop manholes, $100,000. Plans deposit $5. R. D. Leary, ch. engr. CD 8/21.

Ill., Bensonville—B.A. 11/22—Village, Village Hall, sewage treatment works, sewers, $300,000. Suhr Berryman Peterson & Suhr, 130 N. Wells St., Chicago, Zone 6, engrs. CD 9/28.

LOW BIDDERS

Pa., Mayview—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 25, sewage treatment plant, sewage pump. station at Mayview State Hospital from Washington Eng. & Constr. Co., Washington, $337,816 and $135,183 respectively. CD 10/11.

Tex., Austin—Bd. Regents, University of Texas, University Administration Bldg., Oct. 24, sanitary and storm sewers, from Joe Bland Constr. Co., Box 1158, $56,321 and $54,600 respectively. CD 10/2.

Tex., Waxahachie—City, sanitary sewer collection lines and Contr. 3, sewage treatment plant, from H. F. Allison, 7110 Junius St., Dallas, $57,232 and $151,000 respectively. CD 9/27.

▲ **Va., Roanoke**—City, Municipal Bldg., Oct. 23, treatment plans, from E. and E. J. Pfotzer, 4910 MacArthur Blvd., N.W., Wash., D.C., $1,546,260***Tinker Creek interceptor sewer line, from M. S. Hudgins, Joe Hudgins and Claude Pace Jr., 31 College Ave., Salem, $370,500***lower half or Roanoke River interceptor sewer line, from Central Constr. Co., 200 E. Lee St., Louisville, Ky., $938,750***upper half of River interceptor sewer, from Boyle Constr. Co., Drawer 471, Sumter, S. C., $1,131,000***total bid for interceptor lines, from Ralph E. Mills Co., Salem, and Blythe Bros. Co. Inc., 2911 Hutchinson St., Charlotte, N. C., $2,446,780***3 units gas engine driven and one electric driven air blowing equipment, from The Climax Engine & Pump Mfg. Co., Clinton, Ia., $88,653***alternate B equipment for digestion tanks, from Pacific Flush Tank Co., 441 Lexington Ave., New York, N. Y., $100,000.

CONTRACTS AWARDED

N. Y., Long Beach—City, sewage treatment plant to Horn Constr. Co., Inc., 1776 Broadway, New York, Zone 19, $827,495. Bids 10/2. CD 10/6, under LB.

▲ **N. Y., New York**—Dpt. P. Wks., Municipal Bldg., Gansevoort destructor plant for Dpt. Sanitation, incl. Contr. 6, structures and equip., Contr. 7, electrical work; Contr. 8, heating and ventilating; Contr. 9, plumbing, to Merritt-Chapman & Scott Corp., 17 Battery Pl., Zone 4, $4,446,191. CD 10/6, under LB.

▲ **Ore., Portland**—City, City Hall, 2 mi. Grand Avenue interceptor unit of sewage disposal sys., to Kuckenberg Const. Co., 1104 N. E. Holman St., $1,701,845. Awarded 10/26. CD 10/17, under LB.

Tex., Houston—S. N. Adams & Co., 4001 Westheimer Rd., sanitary and storm sewers, Owner builds, $58,000. CD 1/12.

Tex., Houston—Jno. A. Lomaz, Jr. and J. M. Frost Jr., N. Esperson Bldg., sanitary sewers, Owner builds, $50,000.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

BRIDGES

BIDS ASKED

O., Toledo—B.A. 11/21—Comrs. Lucas Co., Court House, 14 culverts and bridges on various roads. $66,392. Guy E. Neeper, co. engr. CD 12/21/44.

LOW BIDDERS

Iowa—State Hy. Comn., Ames, Oct. 24, 120x20 ft. continuous I-beam bridge also 180x20 ft. continuous I-beam bridge on County Trunk Rd. K over Willow Creek in Sect. 10-81-32 and over Middle Raccoon River in Sect. 27-81-32, SN-1432, Guthrie Co., from Ray Yegge & Sons, Boone, $64,501***210x52 ft. continuous I-beam bridge on relocation of U. S. 6 over Clear Creek in Sect. 8-79-6, U-28, Johnson Co., from Schmidt Constr. Co., Winfield, $118,250***33 rein.-con. box culverts, exten. at various locations on U. S. 59 from Oakland northeast into Avoca, F-554 (3), Pottawattamie Co., from Andersen Constr. Co., Des Moines, $101,182***80x30 ft. continuous I-beam bridge also 141x28 ft. continuous I-beam bridge with two 32x28 ft. I-beam approach spans on U. S. 30 between Sect. 25 and 36-83-15 and between Sect. 27 and 34-83-14, SF-276 (3), Tama Co., from W. A. Burton & Son, Waterloo, $75,126***200x26 ft. continuous I-beam bridge on Iowa 14 over South Fork of Charlton River between Sect. 6-69-21 and Sec. 31-70-21 F-237 (4), Wayne Co., from Ben Cole & Son, Ames, $69,060. CD 10/11.

La., New Orleans—City Purchasing Dpt., City Hall Bldg., Oct. 25, Proposal 15317, overpass and appurtenant work at South Jefferson Davis Parkway, from Boh Bros. Constr. Co., 2400 Cypress St. $484,974. CD 10/3.

Virginia—State Hy. Dpt., Richmond, rejected bids Oct. 17, wid'n. super-elevating and dividing the approaches to A.C.L.R.R. underpass, U. S. 1, between Richmond and Petersburg, Chesterfield Co., L. B. $102,680. CD 10/24, under LB.

Virginia—State Hy. Dpt., Richmond, rejected bids Oct. 18, 172 ft. bridge over Hardware River at end of hard surface of Scottsville, Secondary Route 637, Fluvanna Co. L. B. $57,570. CD 10/24, under LB.

British Columbia—Province of British Columbia, Parliament Bldgs., Victoria, 3 span, overhead span rein.-con. bridge over Canadian Pacific Ry. tracks, Ioco, from W. C. Arnett & Co. Ltd., Penticton, $109,202. CD 10/18.

STREETS AND ROADS

BIDS ASKED

Tex., Fort Worth—B.A. 11/16—City, W. O. Jones, mgr., City Hall, four-lane road on University Dr. on north end of bridge over Clear Fork, incl. 12,540 sq. yd. c. conc base and 14,750 sq. yd. 4½ in. hot mix b. conc. surf.; Unit 2, South Right-of-Way line of

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T & P. R. R. to Crestline Rd., 17,730 sq. yd. 6 in. c. conc. base, 23,960 sq. yd. 1½ in. hot mix b. conc. surf. $200,000. Plans deposit $15. C. M. Thelin, dir. Pub. Wks. CD 10/11-45.

†**Oklahoma**—B.A. 11/24—U. S. Eng., P. O. Box 61, Tulsa, Zone 2, relocation U. S. 69 Highway across Fort Gibson Reservoir, Muskogee Co., Inv. CIVENG 34-066-51-19, $750,000. Plans deposit $35. CD 7/24, under Earthwork, Waterways.

LOW BIDDERS

California—State Div. Hys., Sacramento, Oct. 25, plant mix on cement treated surf., constr. bridges 4.4 mi between Robinson Ferr Bridge and Alton Guide Crossing, Humboldt Co., from Frederickson Bros., 1259 65 St., Emeryville, $946,610. CD 10/2.

Colorado—State Hy. Dpt., Denver, Oct. 24, grading, structures 4.062 mi. at intersection W. 6 Ave., Denver and State Hy. 2 and exten. northwesterly to mouth of Clear Creek Canyon, Jefferson Co., from Brown Constr. Co., 1530 E. Abriendo Ave., Pueblo, $542,799. Est. $552,819. CD 10/18.

Iowa—State Hy. Comn., Ames, Oct. 24, from Central Constr. Co., Indianola, grading 9.663 mi, Iowa 188 out of Plainfield east to U.S. 63, F-975 (1), Bremer Co., $91,704***grading 8.459 mi, Iowa 10 from Sioux Co. line east into Paullina, F 986 (1), O'Brien Co., $86,713, grading 12.059 mi, U.S. 59 from Oakland northerly to Avoca, F-554 (3), Pottawattomie Co., $175,869***from Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, paving 0.826 mi, U.S. 30 from east corporation line west to west line of Main St. also Adams St. intersection, U-721 (2) Carroll Co., $169,092***from E. M. Duesenberg, Inc., Clear Lake, grading 10.175 mi, Iowa 56 from Fayette Co. line easterly to end of pavement of Elkader F-985 (1), Clayton Co., $140,475***from Condon-Cunningham Co., 12229 Lafayette St., Omaha, Neb., grading 5.565 mi, Iowa 136 from Worthington north into Dyersville F-378 (13), Dubuque Co., $64,027*** from Gust Ostermann & Sons, Ocheyedan, grading 7.897 mi, Iowa 322 from Iowa 9 northerly to Minnesota State line, FN-078, Winnebago Co., $77,886. CD 10/17.

Maryland—State Rds. Comn., Baltimore, Zone 2, Oct. 24, surf. 1.732 mi. along State Rte. 97, divided hy. along Georgia Ave., Contr. M 435-4-315, F. A. Proj. U 152 (3), Montgomery Co., from Wilmoth Paving Co., First and P Sts. S. E., Wash., D. C., grav. $765,832, stone $766,969, slag $7677,467*** macad. base and penetration macad. surf. 1.87 mi, Clopper Rd., Old Germantown to Clopper, Contr. M 464-317, F. A. Proj. S 200 (1), Montgomery Co., from Richard F. Kline, 14 Water St., Frederick, $281,294. CD 10/17.

▲ **New Jersey**—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Oct. 17, Contr. 59, preparation of subgrade, roadway drainage, turnpike shoulder, cross road pavement, sidewalks, curbs, guard rails, top soil and seeding, etc. in connection with completion of N. J. Turnpike Sect. 1, between Deepwater and Woodbury, Salem and Gloucester Counties, from Eastern Eng. Co., 4 N. Carolina Ave., Atlantic City, h. conc. $6,217,725; from B. Perini & Sons, Inc., 73 Montevideo Ave., Framingham, Mass., c. conc. $7,072,059. CD 10/20.

N. Y., Brooklyn—New York City Housing Auth., 63 Park Row, New York, Zone 7, Oct. 24, street annd yard imprvs. for Farragut Houses (NYS-20) comprising Sect. 1, in area bounded by York, Navy, Sand, Gold and Bridge Sts., from Murrell Constr. Corp., 51 E. 42 St., New York, Zone 17, $127,300. CD 10/6, under Public Bldgs.

Virginia—State Hy. Dpt., Richmond, rejected bids Oct. 17, straightening, width 4.75 mi. and two bridges Route 5 between Richmond and Charles City C.H., Henrico and Charles City Counties. L. B. $144,261. CD 10/24, under LB.

Virginia—State Hy. Dpt., Richmond, rejected bids Oct. 18, hard surf. 4.9 mi. Secondary Route 622, near Delhart, Grayson Co., L. B. $63,902; hard surf. 6.9 mi. Secondary Road 624 and bridge over Long Branch south of Millwood, Clarke and Warren Counties, L. B. $125,698. CD 10/24, under LB.

Washington—State Hy. Dpt., Olympia, Oct. 24, clearing, draining, grading constr. steel truss bridge with c. conc. approaches on 1.906 mi. Concrete Sauk Valley Rd., F.A.S. S 0798 (1), Skagit Co., from General Constr. Co., 3840 Iowa St., Seattle, $548,636, draining, grading surf. portland cement girder bridge on 1.731 mi. Old Inland Empire Hy., Chaffee Sect., F.A.S. S-SG-0400 (2), Benton Co., from Central Sand & Gravel Co., Pasco, $79,417. CD 10/10.

CONTRACTS AWARDED

▲ **California**—State Div. Hys., Sacramento, c. conc. plant mix surf. constr. hy. separation of structures 4.2 mi. on Eastshore Freeway between Lewelling Blvd. and 0.1 mi. north and south city limits of Oakland, Alameda Co., to Frederickson & Watson & M & K Corp., 873-81 Ave., Oakland, $2,871,212. Bids 10/13. CD 10/24, under LB.

California—State Div. Hys., P. Wks., Bldg., Sacramento, c. conc. on cement treated subgrade, etc. surf. portions, etc., constr. 2 bridges between Tulare Airport and Tagus, Tulare Co., to United Concrete Pipe Corp., Box 425, Baldwin Park, $895,580. Bids 10/11. CD 13-17 under LB.

Okla., Oklahoma City—City, City Hall, asph. Dist. 1135 N. Stiles and N.W. 24 Sts., to Metropolitan Paving Co., 900 E. Indiana St., Zone 4, $69,907. Est. $68,024. Awarded 10-25. CD 5-15.

Tex., Houston—S. N. Adams, 4001 Westheimer Rd., grading, surf. new area Drexel and Westheimer, Owner builds. $50,0000. CD 1-12.

Tex., Houston—Jno. A. Lomaz, Jr. & J. M. Frost Jr., N. Esperson Bldg., asph. paving, streets. Owner builds. $55,000.

Virginia—State Hy. Dpt., Richmond, divided hy. and two bridges 4.43 mi. U.S. 11 between Elliston and Christiansburg, Montgomery Co., to Albert Bros. Contractors, Inc., 1102 Tennessee St. W., Salem, $781,792. Bids 10/17. CD 10/24, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

† **New York**—B.A. 11/14—U. S. Eng., Niagara and Bridge Sts., Buffalo, Zone 7, deepening Buffalo River, Third Stage, Buffalo Harbor, Serial No. CIVENG 30-023-51-7. CD 10/15/45.

† **New York**—B.A. About 11/16—U. S. Eng., 24 St. and Maryland Ave., P.O. Box 1715, Baltimore 3, Md., Birdsall Creek Channel Protection Proj., within limits of village of Greene, Chenango Co., approx. 20 mi. north of Binghamton, Serial No. CIVENG 18-020-51-3.

† **Colorado**—B.A. 11/16—Bureau Reclamation, Dpt. Interior, Loveland, Colo., constr. Bald Mountain pressure tunnel and access roads, Estes Park-Foothills power aqueduct Colorado Big Thompson Proj., about 10 mi. west of Loveland, Spec. DC 3208. L. N. McClellan, ch. engr.

† **New York**—B.A. 11/16—U. S. Eng., 4 St. and Maryland Ave., P. O. Box 1715, Baltimore 3, Md., Birosall Creek channel protection, within limits of village of Greene, Chenango Co. and approx. 20 mi. north of Binghamton, Serial No. CIVENG 18-020-51-3. CD 10/20.

† **Colorado**—B.A. About 11/17—U. S. Eng., P. O. Box 1538, Albuquerque, N. M., channel clearing and straightening, Arkansas River, mouth of Fightmile Creek, near Florence, Serial No. CIVENG -29-005-51-7.

† **Arizona-California-Nevada**—B.A. 11/21—Bureau Reclamation, Dpt. Interior, Coachella, Calif., earthwork, pipe lines and srtuctures, laterals 88.6 914 and 93.0 and sublaterals Part 1 of Unit 9, Coachella Valley Distribution System, All-American Canal System, Boulder Canyon Proj., in vicinity of Mecca, Spec. DC-3219. Michael W. Straus, comr.; adv. ENR 10/26.

† **Illinois**—B.A. 11/21—U. S. Eng., 808 U. S. Court House & Custom House, 114 Market St., St. Louis, 1, Mo., bank protection for Chain of Rocks Canal, Mississippi River, Granite City and vicinity, Madison Co., divided into 2 sections, Proj. Item 1, protection east side of canal and Proj. Item II, on west side of canal, Inv. No. CIVENG 23-065-51-23. CD 10/23.

† **Tennessee**—B. A. 11/21—U. S. Eng., P. O. Box 97, Memphis, Zone 1, preparation slopes and construct asph. paving Presidents Island, on left bank of Mississippi River at head of Presidents Island in Memphis, Inv. Serial No. CIVENG 40-041-51-50.

† **Wyoming-Nebraska**—B.A. 11/21—Bureau Reclamation, Dpt., Interior, Torrington, rehabilitation Lateral 98.1, station 17 plus 13.5 to station 44 plus 75.4, Fort Laramie Canal North Platte Proj., Spec. 703-C-160; adv ENR 11/9.

LOW BIDDERS

† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, rejected bids Oct. 13, approx. 85,000 cu. yd. earthwork on enlargement East Atchatalaya Basin Protection Levee between Lottie and Ramah, Point Coupee Parish, Inv. 51-47. L. B. $53,448. CD 10/19, under LB.

Louisiana—Bd. Levee Comn., Civil Courts Bldg., New Orleans, rejected bids Oct. 19, 1,460 lin. ft. wooden revetment, repair approx. 2,190 lin. ft. wooden revetment and topping 8,000 lin. ft. of levee in Bohemia Spillway area, Plaquemines Parish, L. B. $75,412. CD 10/26, under LB.

▲ † **Virginia**—U. S. Eng., foot of Front St., Norfolk, Oct. 24, Wing and Saddle Dikes, Bugs Island Reservoir Proj. on right and left banks of Roanoke River, adjacent to concrete dam and approx. 20 mi. by river downstream from Clarksville and approx. 1o mi. southwest of South Hill, from H. N. Rodgers & Sons Co., 62 S. Front St., Memphis, Tenn., $1,005,091. Est. $1,191,002. CD 9/29.

CONTRACTS AWARDED

Miss., Gulfport—Harrison Co., Court House, 3,214,474 cu. yd. dredging, hydraulic sand fill on seawall between Henderson Point and Gulfport, to McWilliams Dredging Co., 860 St. Charles Ave., New Orleans, La., $721,005. Bids 9/29. CD 9/14.

Tex., Houston—S. N. Adams & Co., 4001 Westheimer Rd., earthwork, site development in new area Drexel and Westheimer, Owner builds. $35,000. CD 10/2.

AIRPORTS

BIDS ASKED

† **Miss., Biloxi**—ELECTRICAL and DISTRIBUTION SYSTEM—B.A. 11/22—Borchard Eng. Contracting Office, Keesler Field, repairing electrical and distr. sys. at Keesler Field.

LOW BIDDERS

▲ **Mo., Kansas City**—RUNWAY—City, c/o Reed Mckinley, City Hall, Zone 6, Oct. 24, paving 7,000 ft. runway municipal airport from Perry McGlone Constr. Co., 1805 Grand St., Zone 8, $1,021,972. Est. $1,040,000. CD 10/13.

CONTRACTS AWARDED

Del., New Castle—LIGHTING SYSTEM—New Castle Co. Airport, New Castle, airport lighting sys., to Davis & Reed, Narberth, Pa., $80,000.

LATIN AMERICA

Brazil—National Railway Dpt., Rio de Janeiro, receiving bids December 4, constr. piers for 1,368 meter bridge to carry both rail and highway traffic across the river between towns of Proprio and Colegio. $6,150,000. Oscar Machado da Costa, engr. CD 9/8.

PUBLIC BUILDINGS

BIDS ASKED

Minn., Rochester—SERVICE—B. A. 11/14—State, Dpt. Admin., P. T. Peterson, dir. Purchases, 19 State Capitol, St. Paul, 3 story, bsmnt. service center bldg. with 1 story, bsmnt. kitchen wing. $250,000. Ellerbe & Co., 505 First National Bank Bldg., St. Paul, archts. CD 5/29.

N. Y., Brooklyn—HOUSING IMPRVS.—B.A. 11/14—New York City Housing Auth., 63 Park Row, New York. Zone 7, topsoil and planting for Farragut Houses (NYS-29) comprising Sect. 1, in Brooklyn Boro, in area bounded generally by York, Navy, Sands, Gold and Bridge Sts. Plans deposit $25.

Fla., Sanford—HOUSING—B.A. About 11/15—Sanford Housing Auth., c/o Elton J. Moughton, archt., Sanford, 125 housing units. CD 12/15.

Mo., St. James—HOSPITAL—B.A. 11/15—State, Dpt. P. Health & Welfare, W. Ed. Jameson, dir. and Fred E. Appleton, dir. P. Bldgs., 100 State Capitol, Jefferson City, 3 brick, concrete wings to hospital at Federal Soldiers Home. Plans deposit $25.

Tenn., Chattanooga—HOUSING—B.A. 11/15—Chattanooga Housing Auth., c/o Selmon T. Franklin, archt., 421 Poplar St., 400 housing units for Whites. CD 2/24.

† Alaska, Juneau—SCHOOLS—B.A. 11/15—Dpt. Interior, Div. Territories and Island Possessions, Alaska Pub. Wks., Juneau, three 1 story school addns., Serial No. 50-A-48. Plans deposit $25.

Que., Lacolle—BUS TERMINAL—B.A. 11/15—Acting Secy. Dept. P. Wks., Hunter Bldg., Ottawa, Ont., bus terminal and examining warehouse. Approx. $250,000. Plans deposit $100. G. Brault, c/o owner, archt.

Que., Lacolle—CUSTOM—B.A. 11/15—R. Fortier, Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., custom bldg. $250,000. CD 3/17.

N. C., Chapel Hill—HOSPITAL—B. A. After 11/15—North Carolina Sanitorium for Treatment of Tuberculosis, Chapel Hill, 3 story 100-bed brick hospital. Plans deposit $50, general, $25 each mechanical. F. Carter Williams, Masonic Temple Bldg., Raleigh archt. CD 10/19.

S. C., Columbus—OFFICE—B. A. After 11/15—State Hy. Dpt., Columbia, 5 story brick, concrete office. Extended date. Hopkins, Baker & Gill, Florence, archts. CD 9/26.

† Conn., New London—MEMORIAL CHAPEL—B.A. 11/16—General Services Admin. Public Services Admin., General Service Bldg., Wash., D. C. memorial chapel at U. S. Coast Guard Academy. Plans deposit $5. CD 1/26.

Ky., Lexington—HOSPITAL—B.A. 11/16—B. H. Lowry, dir. Div. Purchase, Commonwealth of Ky., Div. Purchase, State Office Bldg., Frankfort. Negro Ward Bldg. at Eastern State Hospital. Plans deposit $25. Extended date. Frankel & Curtis, Central Bank Bldg., archts. & engrs.; consultants J. B. Rieman, 110 State Office Bldg., Frankfort, ch. engr. CD 10/13.

† Me., Corea—BUILDINGS—B.A. 11/16—First Naval Dist., Headquarters, 495 Summer St., Boston, Mass., two 1 story wood bldgs., approx. 1,300 ft. roads, water, sewer, power and telephone facilities, erect DAJ antennae array sys., etc., Spec. 25589. Plans deposit $20.

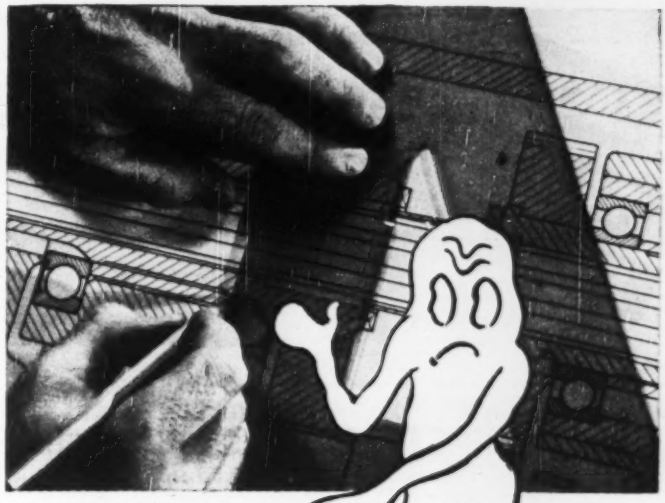
▲ O., Columbus—SCHOOL—B. A. 11/16—Dr. T. C. Holy, chn. Comm. for New Residential Schools for Blind & Deaf, c/o Dpt. P. Wks., 705 Ohio Dpts. Bldg., Zone 15, Ohio State School for Blind in Sharon Twp., $3,000,000. Plans deposit $100. Bids 9/21 rejected. Outcalt, Guenther & Assoc., 13125 Shaker Square, Cleveland Zone 20, archts. CD 9/28, under LB.

▲ Ont., Toronto—HOSPITAL—B.A. 11/17—New Mount Sinai Hospital, Arthur Cohen, chn. Bldg. Com., 105 King St. West, superstructure and mechanical trades 12 story, 213x210 ft. Henry & Berry, Ave. and Elm St., 4 story wing, Elm St., 2 story section, Murray St. $4,000,000. Kaplan & Sprachman, 17 Davenport Rd., archts. Govan, Ferguson, Lindsay, Kaminker, Maw Langley & Kennleyside, Morrison, Hershfield, Millman & Huggins, 96 Bloor St. W., engrs.

Calif., Baldwin Park—GYMNASIUM, etc.—B. A. 11/20—Covina High School Dist., Citrus Ave., Covina, 25,000 sq. ft. gymnasium and 1 story, reinforced brick shop bldg. at Baldwin Park High School. $250,000. Plans deposit $10. Frederick Kennby, Jr., 1041 E. Green St., Pasadena, archt. CD 7/7.

▲ Ont., Toronto—OFFICE—B.A. 11/20—Ontario Dpt. P. Wks., Queens Park 5 story, with central penthouse and 3 story side wings office for Workmen's Compensation Board Head Office. $3,500,000. Plans deposit $75. C. N. Williams, c/o owner, archt. CD 4/4/49.

▲ Ont., Toronto—SCHOOL—B.A. 11/20—York Twp. Bd. Educ., 365 Weston Rd., Zone 9, vocational school, Keele St., near Elora Rd. $1,500,000. Plans deposit



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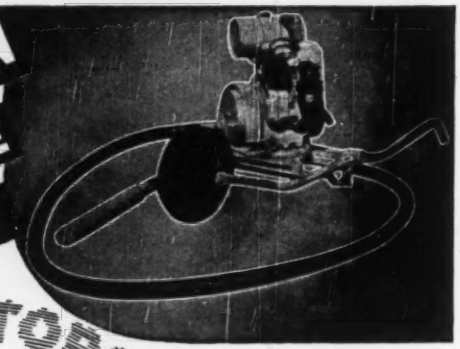

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$25. John B. Parkins Assocs., 717 Church St., archts. CD 11/7.

▲ **Calif., Alameda**—SCHOOL—B.A. 11/21—Bd. Educ., 2267 Alameda St., Encinal High School, $1,000,000. Plans deposit $50. Ernest J. Kump, 62 California St., San Francisco, archt. CD 6/10/48.

Calif., Sacramento—PUBLIC WORKS—B.A. 11/21—State Div. Hys., P. Wks. Bldg., Sacramento, (1) general (2) electrical work (3) plumbing, heating and air-conditioning (4) elevators, 180,000 sq. ft. rein.-con., steel Public Works Bldg. Annex. Plans deposit $75. Extended date. Anson Boyd, Sacramento, state archt. CD 10/16.

La., Abbeville—COURT HOUSE—B. A. 11/21—Vermillion Parish Police Jury, c/o archt., court house. Plans deposit $50. A. Hays Town, 210 Third St., Baton Rouge, archt. CD 8/29/49.

▲† **Md., Bethesda** — BOILER PLANT — B.A. 11/21 — Public Bldgs. Service, General Services Bldg., 19 and F Sts. N. W., Wash. 25, D. C., 3 story, penthouse, 110x238 ft., rein.-con., steel, brick, limestone boiler plant and 2 story, 52x108 ft. incinerator, 2 underground steel oil storage tanks 80 ft. diam., 14 ft. high, etc., at National Institutes of Health, Proj. 18-063. $5,000,000 available. CD 11/2/45.

Tex., Atlanta—HIGH SCHOOL—B.A. 11/21—Atlanta Independent School Dist., Atlanta, high school, $250,000. Extended date. Stanley Brown, 1905 N. Harwood St., Dallas, archts. CD 10/2.

Tex., Phillips—SCHOOL—B.A. 11/21—Phillips Independent School Dist., Phillips, 2 story part bsmnt., 70,000 sq. ft., brick, concrete school, steel frame and fdn. $660,000. Plans deposit $25. Wm. C. Townes, 1208 W. 10 St., Amarillo, archt. A. C. McAdams, Majestic Bldg., Fort Worth, and Associated Mechanical Engineers, Lubbock, engrs.

Ind., Portland—HOSPITAL—B.A. 11/28—Bd. Comrs. Jay Co., Jack Thornburg, aud., Court House and Memorial Hospital Bd. Trustees, Portland, 4 story, 97x132 ft., brick, rein.-con., structural steel county hospital, $700,000 Hamilton & Graham, Western Reserve Bldg., Muncie, archts. CD 8/4.

N. Y., Tuckahoe — HOUSING — B.A. 11/29 — Tuckahoe Housing Auth., Village Hall, four 3 story frame, rein.-con., brick buildings. $846,000.

LOW BIDDERS

▲ **Colo., Pueblo** — SENILE — Colorado State Hospital, Pueblo, Oct. 18, general contract 6 story full bsmnt., 120x322 ft., T-shaped, brick, concrete senile bldg. addn., from Mead & Mount Constr. Co., 240 Railway Exchange Bldg., Denver, **$1,222,000**. CD 9/26.

N. Y., New York—SCHOOL—Supt. School Buildings, Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, Morris High School addn., E. 166 St. between Boston Rd. and Jackson Ave. from Maran Constr. Co., Inc., 1910 Arthur Ave., Zone 57, **$644,700**. CD 10/6.

S. C., Spartanburg — HOUSING — Spartanburg Housing Auth., c/o Harold Woodward, archt., 247½ E. Main St., Oct. 25, 100 housing units, Proj. SC 3-3, from McKoy-Helgerson Co., Spartanburg, **$919,000**.

CONTRACTS AWARDED

▲ **Ark., Little Rock**—HOUSING—Little Rock Housing Auth., Little Rock, 400 unit negro housing, Proj. No. Ark-4-4, to Farnsworth & Chambers, Inc., Box 74, Houston, Tex., **$3,192,257**. Bids 10/12. CD 10/19, under LB.

Ill., Park Ridge—SCHOOL—School Dist. 64, Corner Glen Lake and Brophy Sts., 1 story, bsmnt., brick, stone school, to Slezak Constr. Co., 5109 N. Leonard St., Chicago, Zone 30. **$330,000**. Awarded 10/23. CD 10/4.

Ind., Gary—POLICE HEADQUARTERS AND COURT—Bd. P. Wks., City Hall, police headquarters and court bldg., to John Adinolfi, 3827 Main St., East Chicago, **$699,866**, Est. $700,000. Awarded 10/23. CD 10/10, under LB.

▲ **Mich., Detroit**—LIBRARY—City, Bd. Educ., Wayne University, 1354 Broadway, brick, steel, concrete library, to C. H. Reisdorf, Inc., 831 Fox Bldg., **$1,245,121**. CD 10/18.

† **N. J., Dover**—PILOT PLANT—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., experimental high explosive pilot plant Phase II at Picatinny Arsenal, to H. K. Ferguson Co., 19 Rector St., New York, 6, N. Y., **$694,900**. Bids 9/28. CD 8/23.

N. Y., Brooklyn—SCHOOLS—Bd. Educ., 49 Flatbush Ave. Exten., Zone 1, general contract P.S. 199 addn., Elm Ave. between E. 12 St. and Coney Island Ave. to Colmar Constr. Co., 364 Gold St., Zone 1, $763,000. Bids 10/6, awarded 10/26. CD 10/13, under LB.

▲ **N. Y., Brooklyn**—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Zone 1, P. S. 273, Cozine Ave. from Jerome to Warwick St., to Caristo Constr. Co., 26 Court St., Zone 2, **$1,145,000**. Bids 10/4, awarded 10/26. CD 10/10, under LB.

N. Y., Flushing—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, P.S. 120 addn., 58 Ave. and 136 St., to Lawrence J. Rice, 30, Deepden Rd., Forest Hills, $573,700. Bids 9/27. CD 9/22.

▲ **N. Y., New York**—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, P. S. 121, Arnow Ave. between Bouck and Throop Aves., to Psaty & Fuhrman, Inc., 369 Lexington Ave., **$1,582,000**. Bids 9/22, awarded 10/26. CD 8/31.

N. Y., New York—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, P. S. 152 addn., Nagle a nd Hillside Aves., Elwood

and Sickles Sts., to Lawrence J. Rice, Inc., 30 Deepden Rd., Forest Hills, $438,000. Bids 9/25, awarded 10/26. CD 9/21.

Okla., Taft—INFIRMARY—Bd. Affairs, Capitol, Oklahoma City, Zone 5, TB infirmary bldg., dining room, kitchen and infirmary at Consolidated Negro School, to Dittmars-Dickman Co., Manhattan Bldg., Muskogee, $410,779. Bids 10/24, awarded 10/25.

▲ Yukon Territory, Whitehorse—DWELLINGS—Canadian Commercial Co., 70 Lyon St., Ottawa, Ont., 100 dwellings at Whitehorse and 2 dwellings at Dawson Creek, to Manwell Constr. Co. Ltd., 410 Seymour St., Vancouver, B. C., Approx. $1,000,000. CD 6/30.

COMMERCIAL BUILDINGS

BIDS ASKED

Tenn., Nashville—STORE—B. A. After 11/15—Cain-Sloan Co., 2095 Ave. N., department store, $500,000. CD 12/2/49.

SOON LETS CONTRACT

▲ N. Y., Ithaca—LABORATORY—Cornell University, College of Engineering, Ithaca, soon lets contract, material testing laboratory. $1,386,000 Shreve, Lamb & Harmon, 11 E. 44 St., New York, Zone 17, archts. CD 10/5.

Tex., Dallas—CHURCH—Oak Cliff Methodist Church, 549 E. Jefferson St., soon lets contract, 2 story, structural steel church. Broad & Snelson, 618 Reserve Loan Life Bldg., engrs.

LOW BIDDERS

La., New Orleans—NOVITIATE—Sisters of St. Joseph, 2116 Ursuline Ave., Oct. 24, 2 story, rein.-con. frame on creosoted piles, brick novitiate bldg., from Lionel F. Favret, 937 Gravier St., $376,438. CD 10/4.

Mich., St. Joseph—SCHOOL—Trinity Lutheran Church, Court and Pearl Sts., Oct. 18, 2 story, bsmnt., steel, rein. con. floor, brick school, from John Traff Constr. Co., 3735 N. Clark St., Chicago 13, Ill., $575,000. CD 10/13.

Wyo., Powell—HOSPITAL—War Memorial Hospital Dist. 1, Powell, Oct. 10, 31-bed hospital, from Western Constr. Co., Lovell, $266,104. CD 10/2.

CONTRACTS AWARDED

Mich., Oak Park—HOUSING—Edward Rose Bldg. Co., Edward Rose, pres., Oak Park, 1½ story, brick veneer homes, Oak Park Blvd. and Scotia Rd. section. Owner builds, $900,000.

▲ Mo., St. Louis Co.—RESIDENCES—Adrian Koch, Inc., Cannonbury Dr., Webster Groves, St. Louis, Zone 19, two hundred ranch type residences in Yorkshire Hills subdivision vicinity of Hy. 66, Drake and Southside Aves., St. Louis Co., to Adrian Koch, 5816 Potomac St., St. Louis, Zone 9, Approx. $1,600,000.

Neb., Lincoln—DEPARTMENT STORE—Gold & Co., 10 and N Sts., retail department store addn., to W. J. Assenmacher Constr. Co., 625 N. 17 St., $400,000. Davis & Wilson, 225 Stuart Bldg., engrs.

▲ N. Y., Jamaica—HOSPITAL—Jamaica Hospital, 89 Ave. at Van Wyck Blvd., hospital addn., to Caye Constr. Co. Inc., 356 Fulton St., Brooklyn. Approx. $1,200,000. Bids 8/29. CD 8/11.

N. C., Brevard—APARTMENT—Ben Lee & John D. Sloeter Jr., Brevard, apartment development. Owner builds, $325,000.

Tenn., Memphis—HOMES—H. Dlugach & Co., 14 N. 2 St., 50 homes, Wells Station Rd. Owner builds, $450,000.

Tex., Freeport—DWELLING UNITS—Maybee Realty Co., 2204 Fannin St., Houston, 40 multiple dwelling units. Owner builds, $275,000. CD 10/16.

Alta., Calgary—OFFICE—Canadian Western Natural Gas Co. Ltd., 215 6 Ave. W., 2 story, bsmnt., 100x140 ft., rein.-con. office, to C. H. Whitham Ltd., 10570 118 St., Edmonton, $564,000. Stevenson, Cawston & Dewar, 340 7 Ave. W., Calgary, archts. Awarded 10/18.

Ont., Toronto—APARTMENT—Max Sharp, 11 Manitou Blvd., 5 story, bsmnt., rein.-con., steel brick, cut stone 55 suite apartment and two penthouses, bsmnt. parking area. Owner builds, $500,000. Gordon S. Adamson, 906 Yonge St., archt.

Que., Beauport—HOSPITAL—Reverend Sisters of Charity, 5 St. Olivier St., Quebec City, hospital exten., to F. Marquis & Sons Ltd., 177 Cremazie St., Quebec City, approx. $800,000. P. Levesque, 130 Turnbull Ave., Quebec City, archt. CD 11/12/47.

INDUSTRIAL BUILDINGS

BIDS ASKED

W. Va., Morgantown—WAREHOUSE, etc.—B.A. 11/14—Owner, c/o Robert J. Bennett, Monongahela Bldg., warehouse and store, $240,000.

SOON LETS CONTRACT

▲ Ga., East Point—WAREHOUSE—Colonial Stores, Inc., c/o Robert & Co. Assocs., archts., 96 Poplar St. N.W., Atlanta, soon lets contract, warehouse. Approx. $1,000,000. CD 1/23/48.

CONTRACTS AWARDED

Ark., North Little Rock—WAREHOUSE—555 Inc., R. E. Stueber, pres., 3 and Broadway, Little Rock, warehouse, 1600 E. Washington St., to Peterson, Garbi & Joseph, 123 N. 9 St., North Little Rock. Est. $400,000. Erhart, Eichenbaum & Rauch, Wal-Wallace Bldg., Little Rock, archts. CD 10/20.

Ill., Cicero—SUB-STATION—Public Service Co. of Northern Illinois, 72 W. Adams St., Chicago, Zone 3, brick, steel, concrete Sub-station 52, to The Cook Co., 228 N. LaSalle St., Chicago, Zone 1, $200,000. Awarded 10/18. Sargent & Lundy, 140 S. Dearborn St., Chicago, Zone 3, engrs.

Ill., Evanston—PLANT—Rust-Oilum Co., 2425 Oakton St., 1 and 2 story, 150x160 ft. plant addn., to C. W. Harnes, 135 S. LaSalle St., Chicago, Zone 3, $150,000. Awarded 10/17. W. Fred Dolke, 189 W. Madison St., Chicago, Zone 3, archts.

Ill., Morton Grove—FOUNDRY—Wells Mfg. Co., 7800 N. Austin St., 1 story, steel, brick, concrete foundry addn., to City Wide Builders, 54000 N. Elston St., Chicago, Zone 30. $80,000. Awarded 10/23. CD 10/20.

Ill., Peoria—WAREHOUSE—Omar, Inc., 1019 Harney St., Omaha, Neb., branch warehouse, to V. Jobst & Sons Co., Wayne Bldg. Approx. $250,000. CD 9/19, under LB.

Mo., St. Louis—BUILDING—H. & H. Machine & Motors Parts Co., 421 & W. Easton Ave., Zone 13, 2 story, brick, steel, 5,000 sq. ft. floor space bldg., to Willingham Constr. Co., 5701 Vernon Ave., Zone 12. Bids 8/29. CD 8/28.

Mo., St. Louis—LABORATORY, etc.—Presstite Eng. Co., 3900 Chouteau Ave., Zone 10, rebuilding 1 and 2 story, brick, steel laboratory and office, and 1 and 2 story, 142x142 ft. and 2 story, 60x142 ft. bldg. containing offices, etc., 39 St. and Chouteau Ave., to G. L. Tarlton Contg. Co., 5505 Dale Ave., Zone 10. Approx. $100,000. Bids 8/22. CD 8/10.

▲ N. C., Columbus—MILL—Deering, Milliken & Co., Inc., 240 Church St., New York, N. Y., woolen mill, to Daniel Constr. Co., 429 Main St., Greenville, S. C. Approx. $2,000,000.

O., Columbus—BOILER—American Blower Corp., 666 Marion Rd., 1 story, brick boiler bldg., to Austin Co., 16112 Euclid St., Cleveland. Approx $80,000.

O., Columbus—GRAIN ELEVATOR—Eshelman Grain Co., 690 S. High St., 5 story, concrete grain elevator, Sullivant Ave. and Georgesville Rd., Franklin Twp., to James Stewart Co., 231 S. La Salle St., Chicago, Ill. Approx. $400,000.

▲ Ore., Milwaukie—PARTS DEPOT—International Harvester Co., 180 N. Michigan St., Chicago, Ill. 230x418 ft., concrete parts depot bldg. and 100x127 ft. office, to Ross B. Hammond 1241 N. Williams St., Portland. Approx. $1,000,000. Bids 9/27, awarded 10/21. CD 9/12.

S. C., Timmonsville—MILL—A-Q Mills, Inc., c/o contractor, mill addn., alterations, to Boyle Constr. Co., Sumter. $73,445. Bids 10/20. CD 10/12.

Que., Montreal—FACTORY—Daniels & Mannard Ltd., 720 Marin Ave., factory. Owner builds. $200,000. S. Gerson, 1178 Phillips Pl., archt.

Que., Montreal—WAREHOUSE—De Serres Ltd., 1406 St. Denis St., 2 story, bsmnt., 60x120 ft. warehouse to Daneau Ltd., 5670 Cote de Neiges Rd. $75,000. C. Grenier, 170 Geneva Cres, Mount Royal, archt.

UNCLASSIFIED

BIDS ASKED

Miss., Gulfport — WHARF — B.A. 11/16 — City, c/o Shourds-Mogab-Gab Bean, archts., Great Southern Hotel, 925 ft. rein.-con. sheet pile type, Marginal Wharf, 33,000 cu. yd. in place addn. to existing warehouse. Plans deposit $25. Bids 8/17 rejected. CD 9/14, under Earthworks, etc.

N. C., Raleigh—SWIMMING POOL—B.A. 11/21—State Dpt. Conservation & Development, c/o L. E. Wooten & Co., engrs., Capital Club Bldg., swimming pool and bath house in Crabtree Street Park. Plans deposit $15.

† Oregon — ELECTRICAL DISTRIBUTION SYS. — B.A. 11/21—U. S. Eng., Pittock Block, Portland, exten. electrical distr. sys. at Astoria Reserve Fleet Base. CIVENG 35-026-51-93.

SOON LETS CONTRACT

Missouri—RURAL DISTRIBUTION LINES—Gascosage Electric Co-operative, Dixon, soon lets contract 91.5 mi. rural distr. lines in Miller, Maries, Phelps and Pulaski Counties, $100,000, Frank Horton & Co., Lamar, engrs. CD 10/11.

LOW BIDDERS

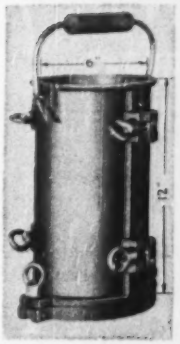
La., Baton Rouge—SWIMMING POOL—Recreation & Park Comm. of East Baton Rouge Parish, c/o Barnard & Burk, engrs., Triad Bldg., rejected bids Oct. 4, swimming and wading pool at Howell Park, L. B. $148,883. CD 10/12, under L.B.

Pennsylvania—PARK IMPRVS.—General State Auth., 18 and Herr Sts., Harrisburg, Oct. 25, general contract public buildings and improvs. to lakes at French Creek State Park, Berks Co., from Fairchance Lumber Co., Fairchance, $389,000; plumbing from Corbit's, Inc., 225 S. Front St., Reading, $77,220. Est. $300,000. CD 10/4.

Tex., Austin—STEAM DISTRIBUTION SYSTEM, etc.—Bd. Regents, University of Texas, D. K. Woodward, cnn., University Administration Bldg., Oct. 24, steam pipe distr. sys., and electric distr. sys., from Joe Bland Constr. Co., Box 1158, $59,000 and $59,937 respectively. CD 10/2.

CONTRACTS AWARDED

▲ Louisiana, Mississippi, Alabama, Georgia, South Carolina and North Carolina—GAS PIPE LINES—Plantation Pipeline Co., c/o Moscowitz, Willner & Millkey, engrs., 1000 Peachtree St. N. E., Atlanta, Ga., 432



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mi. 18 in. and 275 mi. 14 in. oil products line from Baton Rouge, La. to Charlotte, N. C., to Williams Bros. Co., Kennedy Bldg., Tulsa, Okla., $7,000,000. Awarded 10/26. CD 7/25.

Mich., Detroit—ELECTRIC DISTRIBUTION, etc.—Detroit Edison Co., 2000 Second St., brick, masonry electric distr., sub-station and water screen house, Grant Ave. and Lycaste St. respectively, to O. W. Burke Co., 1010 Fisher Bldg., $127,000. CD 9/17/45.

PROPOSED PROJECTS

WATER SUPPLY

Ill., Freeport—City, municipal water softener, alternate proposals (1) filter plant, 2 filters and water softening equip., $461,000, (2) repair old bldg., 2 new filters but no softening plant or equip., $270,000. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago, Ill., consult. engrs. CD 4/16/45.

Ind., Vincennes—City, w w plant, south of here. $540,000.

▲ **Tex., Corpus Christi**—Lower Nueces River Water Supply Dist., c/o F. Roth, pres., 1206 S. Staples St., voted bonds, water plants, $750,000; test wells, production wells, pumping unit, concrete distr. pipe lines, $600,000. CD 10/2.

Tex., Pharr—City, bond election Dec. 12, steel elevated tank and tower, $60,000; water supply distr. lines, sys. rehabilitation, $315,000. J. K. Witten, city engr. CD 10/24.

Tex., San Antonio—City, Water Dpt., San Antonio, c.i. mains for northwest sect. city, $120,000; 1 m.g. steel tank and tower water storage, Loma Linda near De Chantie St., $140,000; drilling, developing artesian water supply well, St. Cloud Rd. near Sunshine Dr. $30,000. W. D. Masterson, 106 W. Market St., engr.

Utah, Elwood—Town, c/o Amos Hansen, Elwood, voted $85,000 bonds, municipal water sys. $125,000. Wm Tempieton, c/o Templeton & Linke Dooly Bldg., Salt Lake City, consult. engrs. CD 4/5/46.

▲ **Va., Winchester**—City, WW imprvs. Proj. 44-P-1028. $2,065,000. Alexander Potter Associates, 50 Church St., New York, N. Y., consult. engrs. CD 9/21.

SEWERS, WASTE DISPOSAL

▲ **Calif., Antioch**—City, City Hall, voted $1,235,000 bonds, sewage treatment plant, sewers. John S. Bates, 3134 Eton St., Berkeley, engr. CD 8/29.

Me., Waterville—City, P. Wks. Dpt., sewers, sewage treatment plant, $600,000, Whitman & Howard, 89 Broad St., Boston, Mass., consult. engrs.

N. M., Tucumcari—City, City Hall, plans by Schmeiding & Goddard, Tucumcari, sewerage sys. addns., treatment plant. $269,250.

O., Newton Falls—City, intercepting sewers, sewage treatment, $600,000. Jones, Henry & Schoonmaker, Security Bldg., Toledo, consult. engrs. CD 5/17.

O., Sheffield Lake—Village, convey sanitary wastes to Lorain system adjacent. Jones, Henry & Schoonmaker, Security Bldg., Toledo, consult. engrs. CD 12/8/47.

Ore., Coos Bay—City, City Hall, voted bonds, sewer project in Bayview-Ferndale area and in Mingus Park Heights area. $750,000. Roy H. Erickson, city engr. CD 11/20/47.

Pa., Bon Air—Radnor-Haverford Twps. Joint Sewer Commrs., Havertown, sewage disposal plant imprvs. $750,000. Wm. Raisch, 31-04 Nor Bldg., Long Island City, N. Y., consult. engr.

Tex., Houston—City, City Hall, 900 Brazos St., Ingram Gully storm sewers, 72 in. pipe, $100,000; Hays-McKee storm sewers, 96 in. down pipe, $500,000. R. W. Lee, city engr. CD 5/24/49.

Tex., Houston—Harris Co., Water Control & Imprvt. Dist. 21, Channelview, Houston, sanitary sewers, $50,000; storm sewers, $60,000. Frank J. Metyko, Scanlan Bldg., consult. engr.

Tex., Pharr—City, bond election Dec. 12, sanitary sewer collection lines, sys. rehabilitation, $275,000; disposal plant, $100,000. J. L. Witten, city engr. CD 10/24.

Wash., Ridgefield—City, City Hall, sewerage sys., $115,000. N. W. Haner & Assocs., 220 S. W. Alder St., Portland, Ore., consult. engrs.

BRIDGES

Mo., Kansas City—City, City Hall, Zone 6, repair, w.d'n., resurf. 23 St. viaduct, $950,000.

▲ **Alta., Edmonton**—City, City Hall, ratepayers to vote Nov. 1, to approve bylaw, high level bridge, alterations, linking north and south Edmonton, $2,200,000. CD 11/28/49.

STREETS AND ROADS

▲ **Pennsylvania**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, construct 40 mi. exten. to Pennsylvania Turnpike, from King-of-Prussia eastward to link with New Jersey Turnpike at Bordentown Interchange, incl. bridge over Delaware River south of Bordentown. $35,000,000. R. B. Stone, c/o owner, ch. engr.

Tex., Pharr—City, bond election Dec. 12, street imprvs., hard paving. $300,000. J. L. Witten, city engr. CD 10/24.

EARTHWORK, WATERWAYS

† **Illinois**—U. S. Eng., 834 U. S. Court House & Custom House, St. Louis 1, Mo., 71,000 lin. ft. bank protection on slopes of Chain of Rocks Canal near east bank of Mississippi River between miles 187 and 194 above mouth of Ohio River near Granite City, Madison Co., opposite the northern portion of St. Louis, Mo.

Tex., Marathon—Brewster Co., Felix P. McGaughy, judge, Alpine, voted bonds, small dam creating 600 acre lake at old Colorado Pena., 4 mi. south of here. $100,000.

LATIN AMERICA

Bermuda, Fort Charles—West Indies Development Br., Port of Spain, plans hotel and cottage colony on site of former Bath Hotel. $1,200,000.

Mexico, Chihuahua—Eloy Ballina & Assoc., Banco Comercial Mexicano, S. A., Chihuahua, plans newsprint factory. $500,000.

Mexico, Ciudad Madero—Perez, Juarez, 104, Mexico City, plans 1,500,000 liter daily capacity desulphurization plant. $1,500,000.

Mexico, Mazatlan—Cia. Coppel, S. A., Mazatlan, Sinaloa, Mexico, plans shrimp cannery. $250,000.

Mexico, Mexico City—Distribuidora del Noroeste, S. A., Monterrey, 101-5, piso, Mexico City, plans liquid combustibles operated refrigerators factory. $300,000.

Mexico, Mexico City—Fabrica Nacional de Brocas, S. A., c/o Armando Ortiz Mena, 5 de Mayo, 29-207, Mexico City, plans metallic painting brush factory. $250,000.

Mexico, Mexico City—Mexican Govt., Sria. de S. y A.P., Mexico City, plans 150-bed homeopathic hospital. $750,000.

Mexico, Papaloapan — Mexican Govt., Sria de R.H., Paseo de la Reforma, 69, Mexico City, plans 4 flood-prevention dams to store 6,400,000,000 cu. meters of water. $17,340,000.

PUBLIC BUILDINGS

▲ **Ark., Little Rock**—HOUSING—Little Rock Housing Auth., Commercial National Bldg., plans by Wittenberg, Delony & Davidson, Pyramid Bldg., 200-unit negro housing. $2,000,000. CD 5/17.

▲ **Calif., Corcoran**—SCHOOLS—Corcoran Union Elementary School Dist., Corcoran, voted $500,000 bonds, John C. Fremont School addn., $353,722; South School addn., $386,799; Central School addn., $292,099; Airport school, $485,936; Corcoran Junior High High School, $662,732. CD 8/29.

Calif., Fresno—SCHOOL—Madison Elementary School Dist., 1628 White St., plans by Wm. D. Coates & M. J. Metz, Helm Bldg., 16 classroom, frame, stucco grammar school, near here. $450,000. CD 7/13.

Calif., Hanford—SCHOOLS—Hanford City School Dist., 208 Cameron St., voted $694,000 bonds schools. CD 8/29.

Calif., Livingston—SCHOOL—Livingston Union Elementary School Dist., Livingston, school. $500,000.

Calif., Sacramento—SCHOOLS—Pacific School Dist., 2965 Govan Way, 2 schools, near here. $627,700.

Calif., San Pablo—HOUSING—City of San Pablo Housing Auth., City Hall, plans by Miller & Warnecke, Financial Center Bldg., Oakland, one hundred 1 and 2 story low-rent housing units, $700,000.

Calif., Santa Monica — SCHOOLS — Santa Monica School Dist., 1650 17 St., voted $4,890,000 bonds, schools. CD 8/23.

Calif., Sonoma—SCHOOL—Sonoma Valley Union High School Dist., Sonoma, $435,000 bond election Nov. 28, Junior High School.

Colo., Colorado Springs—SCHOOL—Colorado State Institution for Deaf & Blind, Alfred Brown, supt., Colorado Springs, plans by Edward L. Bunts, 470 First Natl. Bank Bldg., 2 story bsmnt., school, $500,000.

▲ **Colo., Pueblo**—SCHOOL—School Dist. 60, Pueblo Co., voted bonds, 2 Junior High School Bldgs., 3 grade schools primary unit, 4 school addns., $4,688,000. CD 8/48.

Conn., East Windsor—SCHOOL—Town, Bd. Selectmen, East Windsor, plans by Carl Malmfedit & Assoc., 36 Pearl St., Hartford, school, South End, $500,000. CD 10/25.

Fla., De Funniak Springs—SCHOOL—Bd. P. Instruction, Walton Co., De Funiak Springs, voted $800,000 bonds, school bldg. and imprvs. to school sys. Thomas D. Bailey, Defuniak Springs, school supt.

Ga., Dawson—HOUSING—Dawson Housing Auth., c/o Dennis & Dennis, Richard V. Richard, Associate, Albany, housing units, $875,000. CD 1/19.

Idaho, Pocatello—SCHOOL—Pocatello School Bd., 246 N. Garfield St., plans by Paradice & Hunter, Dietrich Bldg., steel brick Alameda Junior High School, $650,000.

Ill., Skokie—SCHOOL—School Dist. 72, 5405 Touhy Ave., plans by Bradley & Bradley, 226 S. Main St., Rockford, 1 story, rein.-con. brick school, $450,000.

Kan., Olathe—SCHOOL—Roseland School Dist. 92, 5001 Clark Dr., RFD from Kansas City, voted bonds, school, Juniper and Sherwood Sts., north of 50th Roseland Park, $391,000. CD 9/8.

▲ † **Md., Edgewood**—CHEMICAL CENTER—U. S. Eng., First and Douglas Sts. N. W., Wash., 25, D. C., plans by Ralph M. Parsons Co., 617 S. Olive St., Los Angeles, Calif., chemical center facilities, Edgewood Arsenal, $7,000,000.

† **Md., Fort Geo. M. Meade**—SERVICE CLUB—U. S. Army, First and Douglas Sts. N. W., Wash., 25, D. C., masonry service club bldg., roads, walks and utilities, $350,000.

Mass., Taunton—LAUNDRY—Commonwealth of Mass., Dpt. Mental Health, 811 Ashburton Pl. Boston plans by Cornelius W. Buckley, 311 Main St., Worcester, laundry at Myles Standish State Hospital, $350,000. CD 10/11/44.

Mass., Wenham—SCHOOL—Town, School Bldg. Comm., Town Hall, plans by Anderson & Beckwith, 11 Beacon St., Boston, 1 story, brick, steel, concrete school, $300,000.

Mich., Gaylord—HOSPITAL—State, A. N. Langius, dir., State Bldg. Dpt., 115 State Office Bldg., Lansing, plans by St. Clair Pardee, 204 E. State St., St. Johns, brick, steel Northern Michigan Tuberculosis Hospital, $500,000.

▲ **Miss., Columbus**—SCHOOL—Columbus School Bd., bond election Nov. 21, school impvs. $1,500,000.

Mo., Ladue (St. Louis 5, P. O.)—SCHOOL—Bd. Educ., Ladue School Dist., Joel Y. Lund, pres. and Dr. Ivan C. Nicholas, supt., 9060 Ladue Rd., plans by Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis, Zone 1, rein.-con., brick, stone secondary high school, Warson Rd. between Conway and Daniel Boone Parkway, $675,000. CD 10/23.

Mo., Milan—HOSPITAL—Sullivan Co., Milan, hospital, $500,000.

▲ **Mo., St. Louis**—HOUSING—St. Louis Housing Auth., Arthur A. Blumeyer, chn., and Gerald B. Cleary, exec. dir., 901 Washington Ave., plans by Geo. Heilmuth & Assoc., 722 Chestnut St., eleven 11 story bldgs., forty 2 story row houses between Biddle and Dickson Sts. from 21 St. to Jefferson Ave., in Desoto-Carr Housing, $12,000,000. CD 1/9/46.

Mont., Great Falls—SCHOOL—Bd. Educ., Great Falls, plans by A. V. McIver, Strain Bldg., Lincoln School, $475,000.

Neb., Ralston—SCHOOL—Bd. Educ., Ralston, defeated bonds, Junior-Senior High School, $365,000. Davis & Wilson, 225 Stuart Bldg., Lincoln, archts. CD 10/20.

N. J., Bordentown—REFORMATORY WING—N. J. state Institution Dpt., State House, Trenton, plans by Micklewright & Mountford, 72 Ewing St., Trenton, and L. Freeland Stellgroff, Ridgefield Park, 3 story Bordentown Reformatory wing, incl. hospital facilities, offices, cell block and provisions for psychology staff, $860,000. CD 5/15.

N. J., Camden—COURT HOUSE—Bd. Freeholders, Camden Co., City Hall, plans by Edwards & Green, engrs. and archts., Broadway and Carman St., court house addn. $250,000.

N. J., Milltown—SCHOOL—Bd. Educ., Milltown, plans by Edward Hickey, 1 Elm Row, New Brunswick, school addn. $330,000. CD 10/11/45.

N. J., Shipbottom—SCHOOL—Long Beach Island Consolidated School Dist., 14-room elementary school, 19 and Central Ave. $325,000.

▲ **N. J., Trenton**—SCHOOL—Hamilton Twp. Bd. Educ., 1960 Greenwood Ave., plans by Herman L. Mack, 2428 Liberty St., school, T. S. Olden Ave., $400,000; school, Hamilton Ave., $1,200,000; CD 630/49.

▲ **N. C., New Bern**—Bd. Comrs. Craven Co., C. A. Seifert, ch. Bd. Educ., county schools, $700,000; city schools, $1,300,000.

▲ **Pa., Chester**—HOUSING—Chester Housing Auth., Wm. Penn Village, plans by G. Morris Whitesides 2nd, Du Pont Bldg., Wilmington, Del., public housing, $1,100,000. CD 10/15/45.

Pa., Susquehanna Twp. (P.O. Harrisburg)—HIGH SCHOOL—State Public School Bldg. Auth., 1400 N. Cameron St., Harrisburg, high school, $800,000. W. W. Behrens, Jr., c/o owner, ch. engr. CD 5/19/47.

Tenn., Nashville—HEALTH LABORATORY—State of Tennessee, Nashville, plans by Hart & McBryde, 2417 W. End Ave., health laboratory, $650,000.

Tex., Corpus Christi—POWER TRANSMISSIONAL STATION—Lower Nueces River Water Supply Dist., c/o F. Roth, pres., 1206 S. Staples St., voted bonds, power transmissional station, $400,000. CD 10/3.

Tex., Dallas—SCHOOL—Pleasant Grove School Dist., 1354 S. Buckner Blvd., voted bonds school, Pleasant Grove Dist., $400,000. CD 9/25.

Tex., Galveston—FIRE AND POLICE STATION—City, plans by R. R. Rapp, Guaranty Bldg., fire and police station, $750,000. CD 12/1/47.

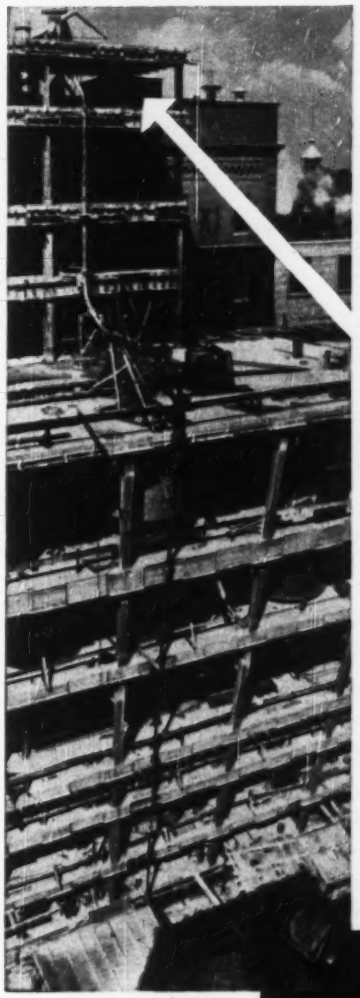
▲ **Tex., Houston**—COURT HOUSE etc.—Harris Co., Court House, voted bonds, court house and jail, $7,000,000. CD 9/22.

Tex., Midland—SCHOOLS—Midland Independent School Dist., Midland, masonry 20-room school, $350,000; masonry Latin-American School, $250,000. CD 3/30.

Tex., Orange—SCHOOLS—Orange Independent School Dist., Orange voted $900,000 bonds, schools, Stone & Pitts, 1872 Calder St., Beaumont, archts. CD 9/22.

Tex., Schulenburg—SCHOOL—Schulenburg Independent School Dist., Schulenburg, defeated bonds, school, $250,000.

Tex., Spring Branch—HIGH SCHOOL—Spring Branch Independent School Dist., Spring Branch, via Houston,



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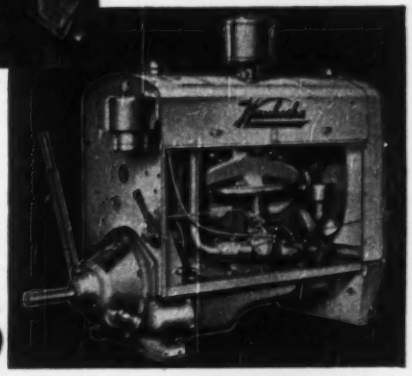

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plans by Wylie W. Vale, 1973 W. Gray St., Houston, high school, **$650,000**; James I. Stillman, structural engr., Dale S. Cooper & Assoc., mechanical engrs., 420 Sul Ross St., Houston.

Va., Bristol—HOUSING—Bristol Housing Auth., Bristol, plans by C. B. Kearfoot & Son, Bristol, 100 housing units. $500,000. CD 1/26.

▲ **Va., Highland Springs**—SCHOOL—Henrico Co., Henrico Court House, Richmond, plans by Dixon & Norman, 1103 E. Main St., Richmond, Highland Springs High School. **$1,250,000.**

Va., Staunton—SCHOOL—City, plans by T. J. Collins & Son, Staunton, School Project 44-P-1024. $412,640; plans by Smithey & Boynton, 112 Kirk Ave., S. W. Roanoke, School Proj. 44-P-1025, $572,179.

▲ **Ont., Galt**—HOSPITAL—South Waterloo Memorial Hospital Bd., R. H. Malcolm, secy., Galt, plans by Allward & Gouinlock, 57 Bloor St. W., Toronto, 139 bed hospital, Approx. **$1,300,000.** CD 2/2/46.

COMMERCIAL BUILDINGS

Ariz., Phoenix—DEPARTMENT STORE—Spiegel, Inc., 1061 W. 35 St., Chicago, Ill., 9 story department store. Dorris-Heyman Furniture Co., lessee.

Conn., Manchester—CHURCH—St. Marys Episcopal Church, 103 Church St., plans by Collens, Willis & Beckonert, 20 Newbury St., Boston, Mass., church, South Manchester. **$250,000.**

Fla., Jacksonville—STORE—Dollar Investment Co., c/o Marsh & Saxelby, archts., Hilderbrandt Bldg., Zone 1, 4 story store, Main and Adams Sts. Approx. $500,000. W. T. Grant Co., lessee.

Ill., Chicago—HOSPITAL—Edgewater Hospital, 5700 N. Ashland St., plans by Edward P. Steinberg, 180 W. Washington St., Zone 2, 9 story, 80x115 ft., reinf.-con. hospital addn. **$900,000.**

▲ **Ind., South Bend**—DORMITORY, etc.—University of Notre Dame, Campus, plans by Holabird, Root & Burgee, 180 N. Wabash St., Chicago, 1, Ill., 3 story, steel, concrete, brick, stone dormitory, "Fisher Memorial", **$700,000**; 3 story, steel, brick, concrete, stone, Morris Inn, **$1,000,000.** CD 4/20.

Ia., Council Bluffs—HOSPITAL—St. Bernard's Hospital, plans by John Latenser & Sons, 1307 Farnam St., Omaha, Neb., hospital addn. **$900,000.**

Mich., Detroit—CATHOLIC CENTER—Cardinal Newman Foundation, James J. Maguire, CSP, Detroit, plans by Diehl & Diehl, 420 Madison Ave., 3 story Catholic Center, incl. library at Wayne University, Cass and Warren Sts. **$500,000.**

N. Y., New York—APARTMENT—Mac-Schiff Realty Co., Inc., 391 E. 149 St., Zone 55, plans by H. Herbert Lilien, 201 W. 72 St., Zone 23, 6 story apartment, 169 St. and Gerard Ave. $300,000.

▲ **N. Y., Syracuse**—OFFICE—Jackson M. Potter, Inc., 237 E. Genessee St., plans by Emory Roth & Sons, 18 E. 48 St., New York 16 story office, E. Genesee and Montgomery Sts. **$3,000,000.**

N. D., Bismarck—BANK—First Natl. Bank, Bismarck, plans by Ellerbe & Co., E. 609 First Natl. Bank Bldg., St. Paul, Minn. bank. $300,000.

O., University Heights—RESIDENCE HALL—John Carroll University, Rev. F. E. Welfle, pres., University Heights, plans by Small, Smith & Reeb, 1010 Euclid Ave., Cleveland, residence hall. $550,000.

Okla., Norman—HOTEL—Boyd Lackett, Norman, plans by Jos. Sway, Norman, 72 room hotel. $600,000.

Pa., Bethlehem—SUPER MARKET—Food Fair Stores, Inc., 2223 E. Allegheny Ave., Phila., plans by Louis Kasoff, 2223 E. Allegheny Ave., Phila., super market. $250,000.

Pa., Darby—NURSES' TRAINING CENTER, etc.—Fitzgerald Mercy Hospital, Darby, plans by Paul Monaghan, 1411 Walnut St., Phila., nurses training center, nurses home, auditorium and garage. Approx. $250,000. Sauter & Castor, 1411 Walnut St., Phila., consult. engrs.

Pa., Lansdale—HOSPITAL—Elm Terrace Hospital, 7 and Broad Sts., hospital addn. Approx. $250,000. Eastern Eng. Co., 836 Elm St., Reading, consult. eng. CD 12/16/46.

Pa., Phila.—SUPER MARKET—Baltimore Markets, Inc., 2301 Walnut St., plans by Joseph Margolis, 226 St. James St., super market, 9 St. and Girard Ave. $250,000.

Pa., Phila.—BUILDING—Bell Telephone Co., 18 and Arch Sts., plans by The Pepper Assocs., 225 S. 15 St., bldg. addns., 9 and Race Sts. $250,000.

Pa., Phila.—SUPER MARKET, etc.—Penn Fruit Co., 1919 Chestnut St., super market, 1219-21-23 Market St., $250,000; shopping center and super market, Roosevelt Blvd., Bustleton Ave., etc. Approx. $250,000.

Pa., Washington—SUPERMARKET, etc.—Hardy & Rankin & Assoc., 40 Murdock Ave., Canonsburg, plans by Tennyson & Van Wart, 666 Washington Rd., Pittsburgh, 1 story, bsmnt., 100x150 ft. brick, tile supermarket, six 20x60 ft. stores, North Ave. $260,000.

S. D., Watertown—HOME FOR AGED—Dakota Conference Methodist Home, Watertown, home for aged. $250,000.

▲ **Tenn., Nashville**—SHOPPING CENTER—William C. Weaver, Jr. and W. H. Criswell, Commerce Union Bank Bldg., shopping center for Hillsboro road sect. on 17½ acre tract. $2,000,000.

Tex., Austin—COMMERCIAL—Mutual Savings Institution, 1005 Congress Ave., plans by H. P. Kuehne, 8 and Brazos St., 6 story commercial, **$500,000.** CD 10/23.

Tex., Dallas—CHILDRENS HOME—Dean Memorial Children's Home, 411 N. Fitzhugh St., plans by Thomas, Jameson & Merrill, 820 N. Harwood St., masonry children home, **$250,000.**

▲ **Tex., El Paso**—OFFICE—El Paso Natural Gas Co., Bassett Tower, plans by Kenneth Franzheim, 2306 Crawford St., Houston, and Carroll & Daeuble, 1001 E. Yandell Blvd., 15 story masonry office, air-conditioning. **$2,500,000.** CD 11/16/49.

Tex., Fort Worth—DWELLINGS—Arlington Heights West Corp., 200 Houston St., 40 addnl., frame, rein.-con. dwellings, in an extension of Arlington Heights West. $320,000.

Tex., Fort Worth—CHAPEL—Texas Christian University, Fort Worth, chapel. **$250,000.**

▲ **Tex., Houston**—LODGE—Elks Lodge B.P.O.E., 820 Crawford St., lodge, 2900 Blk Fannin St. 1,000,000. CD 11/23/49.

▲ **Tex. Houston**—DWELLINGS—John A. Lomax, Jr. & J. M. Frost, Jr., N. Esperson Bldg., 154 dwellings in new area of Little Oak Bayou. **$1,232,000.**

Tex., Houston—APARTMENTS—Melvin A. Silverman, 6205 Almeda Rd., 100 addnl. Negro apartments, frame type constr. **$500,000.** Engineer c/o Dpt. of Owners, and Lloyd & Morgan, 4605 Montrose St., archts.

Tex., Midland—OFFICE—Humble Oil & Refining Co., Humble Bldg., Houston, plans by George & Abel B. Pierce, 4511 Kyle St., Houston, 4 story office. $450,000.

Tex., Wichita Falls—DWELLINGS—Wenonah Heights Corp., 2907 Wenonah St., plans by Butler & Bashier, 4076 Ave. M Lubbock, 30 two family frame dwellings. $375,000.

Wash., Colville—HOSPITAL—Mount Carmel Hospital, Colville, hospital addn. **$450,000.**

▲ **Wash., Seattle**—HOSPITAL—Seattle General Hospital, S. Ave. and Marion St., Zone 4, hospital E. Green Lake Way and Ravenna Blvd. **$3,000,000.** CD 6/30/47.

B. C., Vancouver—QUARTERS—Young Women's Christian Assn., 997 Dunsmuir St., plans by Sharp & Thompson, Berwick Pratt, 1553 Robson St., large addn. quarters. $600,000.

▲ **Ont., London**—MOTHER HOME, etc.—Sisters of St. Joseph, Mother Mary in charge, London, plans by J. M. Watt, 343 Richmond St., 4 story, brick, stone, steel Mother Home (convent) and two 3 story wings. $1,000,000. CD 8/4.

INDUSTRIAL BUILDINGS

▲ **Ala., Selma**—PLANT—Independent Lock Co., Fitchburg, Mass., branch plant, **$1,000,000.**

▲ **Ark., Osceola**—PLANT—The Crompton Co., Waynesboro, Va., factory for textile finishing plant. $2,000,000.

▲ **Calif., Fontana**—STEAM ELECTRIC GENERATING PLANT—The Southern California Edison Co., 601 W. 5 St., Los Angeles, two 100,000 kw. unit steam electric generating plant. **$30,000,000.**

▲ **Calif., Santa Clara**—PLANT—Keasbey & Mattison, Ambler, Pa., 200,000 sq. ft. asbestos mfg. plant, $2,500,000.

▲ **Fla., Jacksonville**—MILL—St. Regis Paper Co., Cantonment, Pensacola, complete kraft pulp and paper mill northeast of here on St. Johns River, $10,000,000.

Fla., Hialeah—WAREHOUSE—Winn & Lorvett Grocery Co., c/o F. Earl Leggett, 409 E. Cass St., Tampa, warehouse, $300,000.

Ga., Atlanta—PLANT—Kraft Food Co., 500 Pershtigo Court, Chicago, Ill., processing and distributing plant. $300,000.

Ill., Des Plaines—LABORATORY—Universal Oil Products Co., 310 S. Michigan Ave., Chicago, research laboratory. $2,000,000.

▲ **Ill., Peoria**—INGOT FURNACE—Keystone Steel & Wire Co., 1000 Industrial St., Peoria, Zone 7, increasing capacity steel ingot furnace, **$1,500,000.**

Ky., Louisville—PLANT—E. I. du Pont de Nemours & Co., Inc., 1374 S. 2d St., 3 new bldgs. to mfg. plant addn. $500,000. E. W. Thompson, plant engr.

▲ **Mich., Albion**—FACTORY—Albion Malleable Iron Co., Collins L. Carter Pres., Albion, 90,000 sq. ft. factory, $1,250,000, Austin Co., 16112 Euclid St., Cleveland, O., consult. engr.

▲ **Mo., Kansas City**—PLANT—Sheffield Steel Corp., div., Armco Steel Corp., 1938 Shepherd Ave., Sheffield Station, expansion of plant. $2,000,000. CD 9/25/46.

Mo., St. Louis—GARAGE—M. H. Mandel & Edward F. Pohrer, c/o Ninth Chestnut Garage, 901 Chestnut St., Zone 1, 3 story top addn. to 1 story, bsmnt. parking garage annex, Chestnut St. west of Ninth St. $225,000.

▲ **Mont., Laurel**—PLANT—Farmers Union Central Exchange, div. office, Hart-Albin Bldg., Billings, catalytic cracking plant to modernize oil refinery. $3,000,000. Universal Oil Products Co. and Refinery Eng. Co., Wright Bldg., Tulsa, Okla., consult. engrs.

▲ **O., Mount Vernon**—WINDOW CLASS PLANT—Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh, Pa., third tank adjacent to two present ones, increased warehouse and office facilities. $2,000,000.

▲ **O., Youngstown**—WAREHOUSES—DeBartolo Constr. Co., 216 Alexander Ave., 9 warehouses and double-track railroad spur, S. Meridian Ave. **$2,000,000.**

Okla., Tulsa—AUTO HOTEL—Mayo Hotel Co., 115 W. 5 St., plans by Leon Senter, Philtower Bldg., 3 story auto hotel, 416 S. Cheyenne St. **$240,000.**

Pa., Phila.—MANUFACTURING—Athos Steel Service, 5 and Butler Sts., plans by Wigham & Tilden, 1601 Chestnut St., manufacturing bldg. Approx. $150,000.

▲ **Tex., Colorado City**—PUMPING STATION, etc.—Basin Pipe Line Co., Midland, and c/o Texas Pipe Line Co., Texas Co. Bldg., Houston, 6,000 hp. crude oil pump station, $525,000; eight 122,700 bbl. steel crude oil storage tank farm, $750,000.

Tex., Dallas—PLANT—Emsco Derrick & Equipment Co., Garland, oil well pump production plant unit. $100,000.

Tex., Houston—SERVICE STATIONS—Ada Oil Co., 609 Hughes St., 2 masonry service stations, 1 at Griggs Rd. and 75 St.; other Westheimer Rd. and Weslayan Ave. $75,000 each.

Tex., Houston—PLANT—Howard Johnson's Famous Ice Cream Shop, 4323 Bellaire Blvd., Job 1, ice cream and products mfg. bldg., 4300 blk., Bellaire Blvd., $150,000; Job 2, ice cream mfg. plant, $100,000; Job 3, ice cream and products mfg. plant, $175,000; Job 4, ice cream mfg. plant, $175,000; Job 5, ice cream and products mfg. plant, $200,000; Job 6, ice cream and products mfg. plant, $200,000.

Tex., Houston—SALES AND SERVICE—Earl North Buick Co., 2215 Milam St., auto service, sales, expansion, Louisiana St. $200,000.

▲ **Tex., Houston**—INGOT PLANT—Sheffield Steel Corp., c/o Ship Channel, Ingot plant expansion, electrically-operated furnaces. $2,750,000. CD 8/21/46.

Tex., San Antonio—STORAGE AND SHOP—Southwestern Bell Telephone Co., Auditorium Circle, storage and shop, $250,000. CD 4/20/45.

Tex., Sweetwater—SHOP, etc.—Lone Star Cement Corp., 1st. Natl. Bank Bldg., Dallas, machine shop, $200,000; storeroom, $150,000; laboratory, $75,000.

Tex., Wichita Falls—OIL PUMPING STATION, etc.—Basin Pipe Line Co., Midland, and c/o Texas Pipe Line Co., Texas Co. Bldg., Houston, 6,000 hp. crude oil pump station, $550,000; two 122,700 bbl. steel crude oil storage tanks, $175,000.

Va., Crewe—HEADQUARTERS—Norfolk & Western Ry. Co., A. B. Stone, ch. engr., General Office Bldg., Roanoke, Zone 17, 2 story, concrete, brick headquarters bldg. for Norfolk Div.

Wash., Spokane—PLANT—Carstens Packing Co., Tide Flats, Tacoma, meat packing plant addn.

Wash., Tacoma—CANNERY—Carstens Packing Co., Tide Flats, cannery addns. $600,000.

▲ **W. Va., Albright**—ELECTRIC GENERATING STATION—Monongahela Power Co., Watson Bldg., Fairmont, and Potomac Light & Power Co., Hagerstown, Md., 50,000 kw. electric generating station on Cheat River, Preston Co. $20,000,000. Sanderson & Porter, 52 Williams St., New York, N. Y., consult. engrs.

Wis., Racine—GARAGE—Racine Motor Service, Inc., Racine, plans by Al. J. Setiz, 216 5 St., 1 story, 17,000 sq. ft., steel brick garage.

UNCLASSIFIED

▲ **Mass., Cambridge**—WAR MEMORIAL BLDG.—City, City Managers Office, City Hall, plans by Richard Shaw, 25 Huntington Ave., Boston, war memorial bldg. $1,100,000. CD 1/24.

Mich., Traverse City—SPRINKLER SYSTEM—State, A. N. Langius, dir. State Bldg. Dpt., 115 State Office Bldg., Lansing, plans by Louis C. Kingscott & Assoc., 208 Elm St., Kalamazoo, sprinkler sys. in Traverse City Hospital, $257,000.

▲ **Tex., San Antonio**—UNDERGROUND CABLES—Southwestern Bell Telephone Co., Auditorium Circle, underground cables, $1,000,000.

▲ **Quebec**—TUNNEL—Quebec-Levis Tunnel Inc., 66 de' Eveche, Rimouski, vehicular tunnel between Levis and Quebec City. $20,000,000.

Que., Quebec City—SWIMMING POOL—L'Oeuvre des Terrains de Jeut, c/o Paul Mecteau, Bd. Trade, Quebec City, plans by J. M. Dion, c/o owner, swimming pool, general recreation centre in Champlain Ward, (Notre Dame de la Garde Parish). $500,000.

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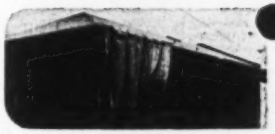

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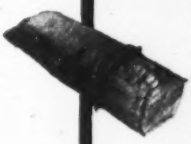

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CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

La., Hammond—B. A. 11/21—City, WW Projects A and B. Plans deposit $25. J. M. Fourmy, Hammond, engr. CD 3/10.

Tex., East Bernard—B. A. 11/21—Wharton County Water Control & Imprvt. Dist. 2, East Bernard, Contr. 1, elevated steel tank and tower, $30,000; Contr. 2, water distr. and supply well, $45,000. Plans deposit $25 each. Garrett Eng. Co., 5008 Almeda Rd., Houston, engr.

LOW BIDDERS

Ky., Danville—City, Oct. 19, water sys. imprvs., from Shely Constr. Co., 809 Manchester St., Lexington, $135,585. Est. $150,000. CD 10/11.

Ky., Owensboro—Owensboro Municipal Utilities, Oct. 24, WW imprvs., from Ryan Constr. Corp., 402 Court Bldg., Evansville, Ind., $711,109.

Tex., Corpus Christi—Nueces Co. Water Control & Supply Dist. 2, Court House, cancelled bids to have been opened Oct. 24, Flour Bluff water sys. $700,000. CD 10/5.

Tex., Gladewater—City, cancelled bids to have been opened Sept. 30, WW, $60,000. CD 9/5.

▲ † **Alaska**—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, Oct. 24, 20 in. supply main, Ship Creek Dam and intake and treatment plant for water supply system, East Fort Richardson, Inv. 51-4, supply main, from S. Macri Constr. Co., Anchorage, $370,918, est. $560,308; dam, intake and plant, from Haddock-Engineers, Ltd. & Assoc., 753 Cerrillos St., Santa Fe, N. M., $966,000, est. $774,532 under Earthworks, etc. CD 9/25.

CONTRACTS AWARDED

R. I., East Providence—State of Rhode Island, State House, Providence, No. 13, Omega pump. station, to R. Zoppo & Co., 842 Boston Prov. Hy., Norwood, Mass., $228,000. Awarded 10/10. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs.

Tenn., Kingston—City, WW imprvs.; to E. N. Murray, Buena Vista, Ga., $159,675. Bids 10/26. Wallace & Clouser, 805½ Locust St., Knoxville, engrs.

Tex., Chillicothe—City, water lines, force account, $35,000. Joe E. Ward, Nacol Bldg., Wichita Falls, engr.

Tex., Copperas Cove—City, water lines, Purchase and Hire, $33,500. J. H. Flood & Co., Amicable Bldg., Waco, engrs.

Tex., Corsicana—City, addnl. water distr. lines, own forces, $40,000. T. C. Forrest, Jr., Praetorian Bldg., Dallas, engr. CD 8/12/49.

Tex., Galveston—City, c.i. water lines, own forces, $40,000. George E. Harris, city engr. CD 5/12.

Tex., Houston—Gulfton Utilities, Inc., c/o J. A. Nix, 1916 Portsmouth St., elevated steel storage tank and tower. Owner builds. $33,500. CD 7/27.

Tex., San Antonio—City, Water Dept., San Antonio, portion proposed water mains, northwest sect. of city, force account, $55,000. CD 10/27.

Tex., San Saba—City, c.i. water lines, own forces, $36,600. B. J. Park, city engr.

Tex., Snyder—City, c.i. water lines, Purchase and Hire, $35,000. James C. Curnutte, Transit Tower, San Antonio, engr.

Tex., South Houston—Max N. Christianson, c/o Christianson Equipment Co., 2711 Harrisburg Blvd., Houston, water sys., off Gulf Freeway and South of South Houston, own forces, $38,000.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Mich., Cheboygan—B.A. 11/20—City, City Hall, Contr. 1, masonry sewage treatment plant, river crossing. Plans deposit $15 refundable to bidders, $10 to others; Contr. 2, 16,763 lin. ft. 8- to 24-in. interceptor sewers, manholes, diversion chambers, etc. Plans deposit $10 refundable to bidders, $5 to nonbidders. Drury, McNames & Porter, State Savings Bank Bldg., Ann Arbor, engrs. CD 3/22/46.

Tex., East Bernard—B.A. 11/21—Wharton County Water Control & Imprvt. Dist. 2, East Bernard, Contr. 3, sewage disposal plant, $65,000; Contr. 4, sanitary sewer collection lines, $60,000. Plans deposit $25. Garrett-Eng. Co., 5008 Alemeda Rd., Houston, engr.

Ore., Portland—B.A. 11/22—City, City Hall, construct 3 mi. 8- to 36-in. East Glisan-Greeley unit of intercepting sewer proj. Plans deposit $25. L. G. Apperson, city engr. CD 7/20/45.

Wash., Spokane—B.A. 11/22—City, City Hall, Sect. E, Ohio Ave. section of intercepting sewer, $500,409. Plans deposit $10. Extended date. C. E. Davis, city engr. CD 10/30.

LOW BIDDERS

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, Oct. 24, sanitary sewers in Willard Ave., Temple City, C.I. 1110, from A. R. Milosevitch, 303 N. Alma Ave., $93,797. Est. $114,700. CD 10/3.

Miss., Gulfport—Harrison Co., rejected bids Sept. 29, trunk sewer lines near Henderson Point, L. B. Sect. A, $178,000, Sect. B $228,932. CD 10/11, under LB.

R. I., Exeter—State of Rhode Island, State House, Providence, sanitary distr. sys., facilities, State School, from Barba Constr. Co., 1430 Main St., West Warwick, $284,849. CD 10/4, under LB.

Tex., Gladewater—City, cancelled bids to have been opened Sept. 30, sanitary sewer extens., $75,000. CD 9/5.

▲ **Va., Roanoke**—City, Municipal Bldg., rejected bids Oct. 23, interceptor sewers, lower half of Roanoke River interceptor sewer line, L. B. $938,750, upper half of the River interceptor sewer, L. B. $1,131,000. Will re-advertise. CD 10/30. Under LB.

Wash., Olympia—City, City Hall, rejected bids Oct. 10, sewage disposal plant, L. B. $356,978. CD 10/18, under LB.

Wis., Walworth—Village, sanitary sewers, treatment plant from E. M. Scheflow, Elgin, Ill., $228,000. CD 10/4.

CONTRACTS AWARDED

Ill., Washington—City, City Hall, sewerage sys. exten., to Fred N. Frank, 1111 Norcrest St., Peoria, sewage treatment plant, and to H. S. Spurgeon, Washington, $367,400. Bids 9/2, awarded 10/7. CD 9/5.

N. Y., Oyster Bay—Town Bd., Town Hall, refuse disposal plant for town of Oyster Bay in vicinity of Syosset, to Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, $242,350. Bids 10/24. CD 9/21.

Tex., Chillicothe—City, sanitary sewers, own forces, $55,000. Joe E. Ward, Nacol Bldg., Wichita Falls, engr.

Tex., Columbus—City, sanitary sewers, own forces, $50,000.

Tex., Grand Prairie—City, sanitary sewer line unit, Purchase and Hire, $60,000. CD 10/30.

Tex., Houston—Gulfton Utilities, Inc., c/o J. A. Nix, 1916 Portsmouth St., disposal plant unit. Owner builds. Approx. $50,000. Howe & Wise, 410 San Jacinto St., engrs.

Tex., Houston—Rottersmann Builders, Inc., 5213 Linden St., sanitary storm sewers, own forces. Approx. $57,500. John G. Turney, 2405 San Jacinto St., engr.

Tex., San Saba—City, sanitary sewers, own forces, $50,000. B. J. Park, city engr.

Tex., South Houston—Max N. Christiansen, c/o Christiansen Equipment Co., 2711 Harrisburg Blvd., Houston, sanitary sewers and open drainage, off Gulf Freeway and south of South Houston, own forces, $63,000.

▲ **Va., Roanoke**—City, Municipal Bldg., sewage disposal plant, to E. & E. J. Pfotzer, 4910 MacArthur Blvd. N. W., Wash. D. C., $1,558,260; Tinker Creek interceptor sewer line, to M. S. Hudgins, 21 College Ave., Salem, $370,500. Bids 10/23. CD 10/30, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

November 14	November 21
Massachusetts	Kansas
November 17	North Dakota
Kentucky	November 24
Minnesota	California
November 29	
Louisiana	

LOW BIDDERS

California—State Div. Hys., 120 S. Spring St., Los Angeles, Oct. 26, structural steel railroad overhead and about 0.3 mi. plant mix on crusher run surf. and lighting sys. at S and I Sts., San Bernardino Co., from K. B. Nicholas, P.O. Box 551, Ontario, $385,574; widn. 6 bridges and constr. 1 new bridge, approaches at various locations between Rte. 79 and Los Angeles Co. line, Ventura Co., from Norman I. Fadel, 7101 Radford Ave., North Hollywood, $89,748. CD 10/2.

Kansas—State Hy. Comm., St. Francis, grading 7.305 mi. and light type surf. 7.311 mi. Proj. 27-12 S 901 (1), Cheyenne Co., to Harry Henery, Inc., Ottawa, $126,184. CD 10/5.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, Oct. 26, bridge, FR—S-21, Brock East, Nemaha Co., from Capital Bridge Co., 1001 N. 9 St., Lincoln, $129,069 ***culverts and bridges, F-464, Taylor-Burwell, Loup and Garfield Counties, culverts, from Francis R. Orshek Co., Fremont, $108,164; bridges from Diamond Eng. Co., Grand Island, $53,292***bridge and guard rail, S-176, Maywood-Curtis, Frontier Co., from Inland Constr. Co., 1867 Leavenworth St., Omaha, $86,574. CD 10/19 under Bridges and Streets and Roads.

North Carolina—State Hy. & P. Wks. Comm., Raleigh, rejected bids Oct. 24, structures 6.59 mi. from point on U.S. 17, approx. 3 mi. northeast of Jacksonville, southeast to N. C. 24 at Piney Green, Proj. No. 2.455, S-426 (1), Onslow Co., L. B. $57,703; structures 4.71 mi. county road from Fiveway Crossing Brunswick-Columbus Co. line to Regan, Proj. 3-9-28-213, S-9-29-212, Brunswick and Columbus Counties, L. B. $68,498. CD 10/27, under LB.

CONTRACTS AWARDED

Mississippi—State Hy. Comm., Jackson, bridge and bridge end pavement 0.114 mi. Miss Hy. 3 between Marks and Crenshaw, F. A. Proj. F 010-3, Quitman Co., to L. & M. Constr. Co., 843 Vance Ave., Memphis, Tenn., $156,271. Est. $140,000. Bids 10/24, awarded 10/25. CD 10/18.

South Dakota—State Hy. Comm., Pierre, 3 bridges and culvert exten., Proj. S 197 (7), Lincoln Co., and one triple 12x8 ft. rein.-con. box and one 12ft. cont. rein.-con. bridge Proj. S 244 (7), Lincoln Co., to Rand Constr. Co., Rapid City, $93,686. Bids 10/24. CD 10/12.

West Virginia—State Rd. Comm., Charleston, Lower Kings Creek Bridge 1329, F-175 (14), Hancock Co., to Carl J. Jacobsen, Inc., 1840 Cecil St., Pittsburgh, Pa., $190,988. Bids 10/24. CD 10/12.

Ont., Oshawa—Canadian National Rys., E. R. Logie, ch. engr., 435 Union Station, Toronto, erecting overhead bridge at Park Road Mile 301-14, Oshawa Subdivisions, to Aiken & MacLachlan Lt., Hartzell Rd., St. Catharines, Approx. $50,000. CD 10/6.

† **Alaska**—Alaska Road Comm., Dpt. Interior, Juneau, 170 ft. bridge over Eklutna River on Glenn Hy. with one 50 and one 35 ft. I-beam approaches; bridge with three 44 ft. I-beams over Noyes slough, Fairbanks; 70 ft. I-beam span over Sinona River on Tok Rd.; 50 ft. I-beam bridge over Tulsona River on Tok Rd., 80 ft. I-beam span over Gulkana River on Richardson Hy., to Munter Constr. Co., Vance Bldg., Seattle, Wash. $262,291. Bids 10/25. CD 10/2.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

November 14	November 17
Maryland	Kentucky
Massachusetts	November 21
November 15	North Dakota
Louisiana	November 24
New York	California

Miss., Jackson—B.A. 11/15—City, City Hall, Street Paving Proj. 130. CD 9/25.

† **Wisconsin**—B.A. 11/21—Bureau Public Roads, Dpt. Commerce, 214 Globe Bldg., 4 and Cedar Sts., St. Paul, Minn.

Sawyer Co.—grav. 1.149 mi. Wisconsin Forest Hy. Proj. 11-B, Chequamegon National Forest. Plans deposit $10.

LOW BIDDERS

▲ **Alabama**—State Hy. Dpt., Montgomery, Oct. 27, double surf. tr. 5.673 mi. from Alabama 74 to Rock Run, Cherokee Co., and single surf. tr. and plant mix 6.99 mi. Mt. Pinson-Cleveland Rd., Jefferson and Blount Counties, from Hugh Steele Constr. Co., Centre, $103,689 and $293,095 respectively***bit. and 1 plant mix 10.227 mi. Boaz-Guntersville Rd., Marshall Co., and grading, drainage 8.109 mi. Higdon North Jackson Co., from Couch Constr. Co., Dothan, $488,582 and $127,411 respectively***grading, drainage and temporary surf. 15.5 mi. road from Georgian Toward Brantley, Butler Co., from Newell Bros. Constr. Co., Hope Hull, $266,455***base, double surf. tr. 4.897 mi. from Muscadine south to Lebnon, Cleburn Co., from W. Henry Dear, Anniston, $60,492 ***bit. 7.281 mi. from Tensaw River through hurricane to Tensaw River, Goldwin Co., from Bennett Constr. Co., Montgomery, $109,660***base, double surf. tr. 5.716 mi. road from Ala. 62 at Forney south through Rock Run, Cherokee Co., from Floyd S. Milford, 1412 S. 13 St., Birmingham, $52,757. CD 10/12.

California—State Div. Hys., 120 S. Spring St., Los Angeles, Oct. 26, road mix on imported base material surf. 1.4 mi. between Imperial Co. line and 3 mi. S. E. of Mecca, Riverside Co., from Griffith Co., 1060 S. Broadway, Los Angeles, $533,704. CD 10/2.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, Oct. 26, sand grav. surf., culverts, S-128 and SF-31041, Wakefield-Allen, Dixon Co., from Francis R. Orshek Co., Fremont, $56,119***grav. S-176, Maywood-Curtis, Frontier Co., from Stewart Bros., 895 N. 16 St., Lincoln, $63,753***grav. F-464, Taylor-Burwell, Loup and Garfield Counties, from Theisen Bros., Osmond, $124,063. CD 10/19.

† **Oregon**—Bureau Pub. Roads, Dpt. Commerce, Morgan Bldg., Portland, Oct. 27, grading 2.3 mi., clearing 4.3 mi., North Umpqua Hy., Douglas Co., from Miller & Strong, 3871 Royal Rd., Eugene, $326,760. CD 10/18.

▲ **Pennsylvania**—State Hy. Dpt., Harrisburg, Oct. 27, crushed stone base with bit. surf. 20 ft. wide, incl. one rein.-con. structure and one rein.-con. bridge 2,991 ft. L. R. 642 (3), T. R. 401, from point 1 mi. from Lincoln Hy., Route 142 to point 0.8 mi. from Route 202, Chester Co., from J. D. Eckman, Atglen, $127,311***construct divided highway consisting of c. conc. pavement 24 ft. wide on each side of a concrete divisor area 4 ft. wide, construct separated north and south traffic lanes each consisting of 24 ft., 25 ft. and variable width c. conc. pavement incl. one rein.-con. structure in each lane, and one through plate girder and rein.-con. bridge, also for constructing temporary north and south traffic lanes of 24 ft. width, crushed stone base with bit. surf., a north ramp of rein.-con. pavement 24 ft. 36 ft. and variable in width and divided pavement 14 ft. and variable in width on each side of variable width concrete divisor area and a south ramp of c. conc. pavement 4 ft. and variable in width, 10,149 ft. L. R. 180, Sects. 6B, and 6B-1, T. R. U. S. 322, in city of Chester, Westerly, Delaware Co., from Berlant Constr. Co.,

(Continued on page 92)

AN IMPORTANT MESSAGE REGARDING FIREPROOFING WITH LIGHTWEIGHT AGGREGATES

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(Continued from page 91)

Inc., 15 Oakland Ave., Harrison, N. Y., $1,193,156; crushed aggregate base with bit. surf. 22 ft. and variable in width incl. construction rein.-con. box, 30,565 ft. L. R. 43025 (1), 60001 (1). T. R. 208, between Grove City Boro and Barkleyville, Mercer and Venango Counties, from E. M. Brown, Inc., 11 Guelich Ave., Clearfield, $538,869. CD 10/11.

Tex., Beaumont—Jefferson Co., Court House, Oct. 23, road imprvs. for Sect. 1, Tyrell Rd., from Noonan Constr. Co., Box 1369, $55,735. CD 10/16.

CONTRACTS AWARDED

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, imprv. 120 St. from Crenshaw Blvd. to Prairie Ave., to Vida Kovacevitch Co., 5300 Imperial Hy., South Gate, $79,090. Bids 10/10. CD 9/12.

Kan., Wichita—City, street imprvs., to Ritchie Bros. Constr. Co., 1820 N. Mosley St., $52,798.

▲ Mississippi—State Hy. Comn., Jackson, grading, culverts, grav. surf., bridge and box bridge 9.207 mi., Miss. Hy. 1 between Miss. Hy. 14 and Hampton, F. A. Proj. F 043-1 (1), Issaquena and Washington Counties, to Jerry G. Alexander, Hatiesburg, $279,695 est. $250,000***grading, culverts, bridge 1.595 mi. Miss. Hy. 47 between Abbott and McCondy, F. A. Secondary Proj. S 348 (1), Clay Co., to Baird & Latimer, Inc., Selma, Ala., $117,455 est. $120,000***incidental grading, culverts, stab. base, double bit. surf. tr. and bridge surf. 6.327 mi. of Miss. Hy. 32 between Bruce and Houlka, F. A. Secondary Proj. S 277 (4), Calhoun Co., to Boyd Constr. Co., Columbia, $113,641*** est. $105,000 incidental grading, culverts, base, double bit. surf. tr. 19.441 Miss. Hy. 7 between Holly Springs and Mississippi-Tennessee State Line, F. A. Proj. F 240 (3), Marshall and Benton Counties, to Memphis Stone & Gravel Co., Exchange Bldg., Memphis, Tenn., $268,911 est. $210,000***grading, bridge, box bridges 12.026 mi. Miss. Hy. 22 between Canton and Flora, F. A. Secondary Proj. S 351 (1), Madison Co., and grading, culvert 5.106 mi. Miss. Hy. 35 between Voiden and Kosciusko, F. A. Proj. F 023 (2) Attala Co., to Kile Killman Constr. Co., Grenada, $338,409 est. $340,000 and $135,921 est. $175,000 respectively. Grand total $1,250,032. Bids 10/24, awarded 10/25. CD 10/18.

† Oregon—Bureau Pub. Roads, Dpt. Commerce, Morgan Bldg., Portland, grading 2.208 mi. Little River Rd. leading into Umpqua National Forest, Douglas Co., to Miller & Strong, 3871 Royal Rd., Eugene, $162,908. Bids 10/24.

South Dakota—State Hy. Comn., Pierre, service grav. 7.946 mi. F 244 (7), Lincoln Co., and grading, structures 12.707 mi. F 254 (14), Bennett Co., to Dave Gustafson & Co., Inc., 502 E. 6 St., Sioux Falls, $250,343. Bids 10/24. CD 10/12.

Tex., Canton—City, street imprvs., paving, Purchase and Hire. Approx. $55,000. Royce E. Wisenbaker, Tyler, engr.

Tex., Cedar Bayou—City, street imprvs., paving, own forces, $60,000.

Tex., Houston—George Haikin, 2107 North Blvd., concrete auto parking area and drainage, to Andrew McLean, 2031 Alta Vista St., $66,500.

Tex., Houston—Rottersmann Builders, Inc., 5213 Linden St., street paving, concrete curb and gutters, own forces. Approx. $50,000. John G. Turney, 2495 San Jacinto St., engr.

Tex., Longview—City, addnl street imprvs. and paving, own forces, $150,000. Julian Montgomery, Littlefield Bldg., Austin, engr. CD 6/9/48.

Tex., South Houston—Max N. Christianson, c/o Christianson Equipment Co., 2711 Harrisburg Blvd., Houston, street constr., grading, surf. off Gulf Freeway and south of South Houston, own forces, $58,500.

▲ West Virginia—State Rd. Comn., Charleston, traffic bound, bridges 12.616 mi. Forman-Mineral Co. Line Rd and Burlington Rd., Proj. S-512 (2) Grant and Mineral Counties and traffic bound and bridges 9.935 mi. Penn-End of Proj. S 502 (2), S 502 (3) Hardy and Pendleton Counties, to Stickley Brothers, Inc., Keyser, $268,471 and $277,637***traffic bound and bridges 7.524 mi. Dorr-Sec. Rt. 12 S 575 (1), Preston Co., and b. conc., widn. surf., guard rail 6.004 mi. Eureka-Waverly Rd. F 182 (16), Wood and Pleasants Counties, to Keeley Constr. Co., Clarksburg, $262,606 and $279,363 respectively***traffic bound 5.101 mi. end of Proj. S 575 (1), Brandonville Rd., Proj. S220, Preston Co., to J. F. Allen Co., Clarksburg, $122,945. Grant total $1,211,022. Bids 10/24. CD 10/12.

EARTHWORK, WATERWAYS

BIDS ASKED

Louisiana—B.A. 11/15—Bd. Levee Comrs., Civil Courts Bldg., New Orleans, 1,480 lin. ft. wooden revetment, topping 8,000 lin. ft. levee in Bohemia Spillway area, Plaquemines Parish. Bids 10/19 rejected. CD 10/30.

P. E. I., Souris—B.A. 11/15—Acting Secy., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater repairs. Approx. $55,000. Plans deposit $20. R. Blais, c/o owner, engr.

† Wyoming—B.A. 11/15—Bureau Reclamation, Dpt. Interior, Riverton, buried asphaltic membrane lining for Pilot Canal, Stations 138 plus 00 to 273 plus 97 and Stations 1e32 plus 00 to 184 plus 30, Riverton Proj., Schedule 1, located approx. 20 mi. northwest of Riverton and Schedule 2, approx. 12 mi. northeast of Riverton, Riverton Proj., Spec. DC-3233. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

Conn., Fairfield—B.A. 11/16—Town Purchasing Auth., Town Hall, 611 Old Post Rd., stone jetty. Plans deposit $5. CD 8/20/47.

† Colorado—B.A. 11/17—U. S. Eng., P. O. 1538, Albuquerque, N. M., channel clearing Arkansas River, mouth of Eightmile Creek, near Florence, CIVENG 29-005-51-7.

† Nebraska and Missouri—B.A. 11/17—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, constructing, strengthening, replacing approx. 12,235 lin. ft. dikes and revetment in or immediately adjacent to Missouri River, in Peru-Aspinwall Bends, Atchison Co., Mo. and Nemaha Co., Neb., is approx. 1 mi. downstream from Brownsville, Neb., Inv. No. CIVENG 25-066-51-48.

† Idaho—B.A. 11/21—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., revetted levees and shaping and revetting existing levees on right and left banks Snake River at Horne, Labelle and Bannock Jim locations, Madison and Jefferson Counties, CIVENG-45-164-51-31. CD 8/16/45.

LOW BIDDERS

Tex., Houston—Harris County Flood Control Dist., Court House, Oct. 19, flood control, 100,250 cu. yd. excav., 4 timber bridges, 9 acres clearing, etc., from Roy L. Anderson, Route 11, Box 520, $33,240. H. R. Jensen, Stewart Bldg., engr.

B. C., New Westminister—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., imprv. pile training wall, Port Mann Channel, Fraser River, from Fraser River Pile Driving Co. Ltd., foot of 20 St., Approx. $180,095. CD 10/12.

CONTRACTS AWARDED

† Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, right bank imprv. at Mud Mountain Dam, Serial No. CIVENG-45-108-51-19, to M. P. Butler, 3419 13 Ave. S.W., Seattle, $119,774, Est. $160,597. Bids 10/23. CD 10/4.

AIRPORTS

BIDS ASKED

N. Y., Idlewild—FUEL STORAGE FACILITIES—B.A. 11/20—At office Chief Engineer The Port of New York Auth., 111 8 Ave., New York, Zone 11, Phase 1. Contr. NYA-139, expansion fuel storage facilities, at New York International Airport. Plans deposit $25. CD 4/27/44.

Tex., Dallas—AIRPORT IMPRVS.—B.A. 11/21—City, City Hall, Main and Harwood Sts., constructing and asph. paving taxiway serving Braniff and Pioneer Lines (Love Field). Approx. $200,000; hard-paving, lighting, new parking zone, $65,000; replacing with concrete of existing runway from center of field to terminal, $190,000. Chapel & Brenneke, Burt Bldg., engrs. CD 6/29.

CONTRACTS AWARDED

Ill., Chicago—AIRPORT—City, Dpt. Purchases, Contracts & Supplies, City Hall, earthwork, drainage, sewer, paving, etc., O'Hare Field, Finger B, Contr. 3, to J. M. Corbett Co., 2501 Salt St., $983,000. Bids 9/1. CD 9/27, under L8.

† Me., Limestone—BOILER PLANT—U. S. Eng., P. O. Box 2316, Boston 7, Mass., temporary boiler plant for H. B. Hangar, Limestone Air Force Base, Eng. 19-016-51-21, to Industrial Heating & Piping Co., 60 Mt. Vernon St., Reading, Mass., $119,090. Bids 10/5, awarded 10/12. CD 9/27.

Newfoundland, Gander—DRAINAGE SYSTEM, etc.—Dpt. Transport., Hunter Bldg., Ottawa, Ont., installing drainage sys. and constr. electrical duct installation at airport, to North Shore Constr. Co. Ltd., 1410 Stanley St., Montreal, Que., Approx. $100,000. CD 12/19/49.

LATIN AMERICA

Venezuela, El Placer—Venezuela Atlantic Transmission Corp., Caracas, awarded contract 195 mi. 10-to 16-in. welded joint natural gas pipe line from El Placer near Las Mercedes to Caracas, La Guaira, Maracay and Valencia, to Williams Bros. de Venezuela, S. A., Caracas. Approx. $4,475,000.

PUBLIC BUILDINGS

BIDS ASKED

Ont., Bradford—SCHOOL—B.A. 11/13—G. S. Adamson, archt., 906 Yonge St., Toronto, 1 story, 120x180 ft. T-shaped, concrete, brick school, for Bd. Educ., M. J. Edward, secy. Approx. $250,000.

Ark., Harrison—HIGH SCHOOL—B.A. 11/15—Harrison School Bd., Harrison, high school. Plans deposit $25. Ginocchio & Cromwell, Hall Bldg., Little Rock, archts. CD 2/24.

Conn., West Hartford—SCHOOL—B.A. 11/15—Bd. Educ., 51 Memorial Rd., school, Sedgewick Rd. Plans deposit $25. Willard Wilkins, 957 Asylum Ave., Hartford, archt. CD 5/8.

N. Y., Hornell—SCHOOL—B.A. 11/15—Bd. Educ., High School Bldg., Hornell, Bryant School addn., $590,000. Plans deposit $15. Carl C. Ade, 31 Gibbs St., Rochester, archt.

Sask., Moose Jaw—DORMITORIES—B. A. 11/15—H. K. Black, archt., Black Block, Regina, 6 dormitories at Training School, for Province of Saskatchewan, Regina. Plans deposit $50.

Que., St. Vincent De Paul—KITCHEN, etc.—B. A. 11/16—Purchasing Agt. Comr. of Penitentiaries, c/o Dpt. Justice, Ottawa, Ont., kitchen and mess hall bldg. at

Laval Training Center, Approx. $250,000. Plans deposit $50.

Mass., Stoneham—HOUSING—B.A. 11/17—Town of Stoneham Veterans Housing Auth., Town Hall, twelve 24 unit full bsmnts. bldgs. Veterans Housing Proj. 200-2, Prospect and Washington Sts. $310,000. Plans deposit $100. Drummey Duffill, Inc., 80 Boylston St., Boston, engr. and archt. CD 9/6.

Calif., San Diego—SCIENCE, etc.—B.A. 11/21—San Diego Unified School Dist., 25 Union Ave., 2 story, rein.-con science and cafeteria bldg. Approx. $250,000. Kistner, Curtis & Wright, Spreckles Bldg., archts. CD 10/27.

† **Arizona**—WAREHOUSE—B. A. 11/22—Bureau Reclamation, P. O. Box 392, Pheonix, warehouse, 5 mi. east of here, WW pumps, piping and deep well. $129,000.

Calif., San Francisco—MEDICAL SCIENCES—B.A. 11/22—Bd. Regents, University of California, Berkeley, 13 and partial 14 story, rein.-con., structural steel medical sciences bldg. at Calif. Medical Center. Approx. $250,000. Plans deposit $150. Blanchard, Maher & Paulus, 369 Pine St., archt. Huber & Knapik, 1 Montgomery St., engrs. CD 3/17/49.

Calif., San Francisco—SCHOOL—B.A. 11/22—Dpt. P. Wks., City Hall, Proposal A, general, plumbing, mechanical and electrical work. Job 841, Proposal B and 841-B electrical work 2 story, rein.-con., structural steel Miraloma School. $290,000. Plans deposit Proposal A $100; Proposal B $50; 841-A $25; 841-B $25. Masten & Hurd, 526 Powell St., archts. Huber & Knapik, 1 Montgomery St., engrs. CD 2/14/49.

Tex., Waxahachie—DWELLINGS—B.A. 11/22—Waxahachie Housing Auth., Waxahachie, 60 dwelling units in 30 buildings, brick veneer exterior, concrete slab fdn. on fill constr. $480,000. Plans deposit $50. Boese & Harkrider, 308 T & P Passenger Bldg., Fort Worth, archts. CD 1/20.

LOW BIDDERS

Calif., Alameda—SCHOOL—Alameda Bd. Educ., Oak St. and Alameda Ave., Oct. 24, 1 story, frame, stucco Frank Otis Primary School, from Pacific Coast Builders, 2530 18 St., San Francisco, $279,400. CD 1/10/48.

▲ **Calif., Corona**—INSTITUTE FOR WOMEN—State Div. Architecture, P. Wks. Bldg., Sacramento, general contract 180,000 sq. ft., rein.-con., steel California Institute for Women buildings, from Robert E. McKee, 4700 San Fernando Rd., West Los Angeles $1,281,300; heating and ventilating, from Johnston & Washer, 1615 Santee St., Los Angeles, $304,900***plumbing, from S. Glen Hickman Co., 3170 E. 11 St., Los Angeles, $312,450. CD 9/19.

▲ **Calif., San Francisco** — HOUSING — San Francisco Housing Auth., 440 Turk St., Oct. 24, 208 unit Bersal Dwellings, incl. 22 three and four story rein.con. bldgs., from Louis C. Dunn, Inc., 799 Monadnock Bldg., $1,949,000. CD 9/26.

▲ **Conn., Deep River** — SCHOOL — Regional High School Comm., c/o Raymond Abbey, Regional Bd., Essex, Oct. 26, Regional High School, Kelsey Hill Rd. Dist. 4, from Associated Constr. Co., 1010 Wethersfield Ave., Hartford, $1,098,000. CD 10/20.

Fla., Orlando—HOUSING—Orlando Housing Auth., Orlando Housing Auth., Orlando, Reeves Terrace Housing Project addn., from Gates-Ragsdale Constr. Co., 1523 Grand Central Ave., Tampa, $660,000.

† **Ill., Chicago**—COURT HOUSE—Public Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C., U. S. Court House, modernization, alterations, from Fred Bergiund & Son, 8008 S. Chicago St., Zone 17, $549,523. CD 10/25/45.

Kan., Arkansas City—SCHOOL—Bd. Educ., Arkansas City, Oct. 16, general contract Junior College and Shop, from D. C. Bass & Sons, Enid, Okla., $282,917. CD 9/20.

Kan., Emporia—DORMITORY—State Bd. Regents, Oct. 17, general contract women's dormitory at Emporia State College, from Blaser Constr. Co., 430 N. Rock Island, Wichita, $498,332. CD 10/11.

Mass., Amherst — DORMITORY — University of Mass., Alumni Bldg. Assoc., Oct. 13, dormitory for University of Mass., from D. A. Sullivan & Sons, Inc., 82 North St., Northampton, $800,000. CD 10/2.

▲ **Mass., Holyoke**—SCHOOL—City, Bd. P. Wks., City Hall, Oct. 24, Highland Junior High School, Northampton St., from M. J. Walsh & Sons, Inc., 14 Shawmut Ave., $1,253,387. CD 10/3.

Mont., Anaconda—HOUSING—Anaconda Housing Auth., rejected bids Oct. 5, 50 Cedar Park Housing L. B. $682,639. Will re-advertise. CD 10/12, under I.B.

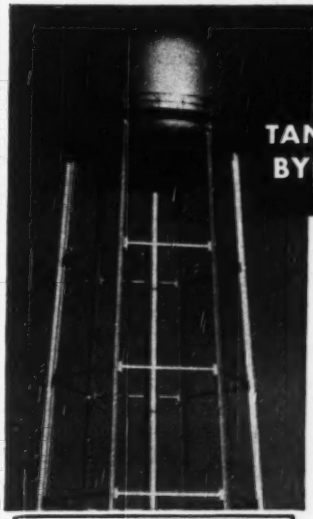
Mont., Helena — HOUSING — Helena Housing Auth., rejected bids Oct. 17, 60 unit housing, L. B. $819,000. CD 10/24, under I.B.

N. C., Kinston—BUILDINGS—State Bd. Correction & Training, S. E. Leonard, comr., Raleigh, rejected bids Sept. 26, 5 buildings at Dobbs Farm, L. B. $588,520. CD 10/4, under I.B.

Okla., Tahlequah—STUDENT UNION—Bd. of Affairs, Capitol, Oklahoma City, Zone 5, Oct. 25, student union bldg. at Northeastern State College, from Walter Nashert Co., 16 E. 27 St., Oklahoma City, Zone 5, $281,000. Est. $275,000. Hudgins, Thompson & Ball, 1100 W. Main St., Oklahoma City, archts.

Tenn., Clinton—HIGH SCHOOL—Anderson Co. Bd. Educ., Clinton, Oct. 25, high school, from V. L. Nicholson Co., 611 S. Central St., Knoxville, $563,535. CD 10/9.

▲ **Tenn., Knoxville**—HOUSING—Knoxville Housing Auth., c/o Bealer & Wilhoit, archts., 203 Journal Bldg., Oct. 27, Lonsdale Homes Housing, from John A. Johnson & Sons, Warehouse Rd., Oak Ridge, $2,697,000.



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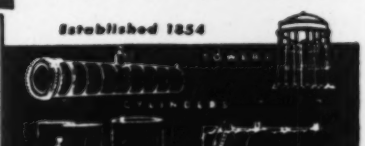

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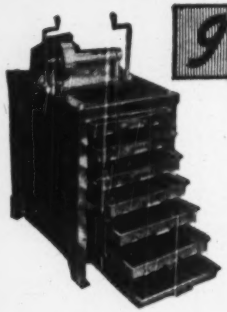

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Tex., Eagle Lake—SCHOOL—Eagle Lake Independent School Dist., Eagle Lake, rejected bids Oct. 17, school, L. B. $370,000. Will re-advertise. CD 10/25, under LB.

Tex., Wharton—SCHOOL—Wharton Independent School Dist., Wharton, Oct. 25, school, from R. F. Ball Constr. Co., Inc., Box 13097, Houston, $279,000. CD 10/10.

† **Va., Fort Lee**—BARRACKS—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., Oct. 24, 3 story, 50x265 ft., concrete, brick, masonry barracks and 1 story, bsmnt., 50x170 ft. mess hall, from Wise Contg. Co., 8 and Grace Sts., Richmond, $581,400. CD 9/27.

† **Wash., Richland**—HOUSES—General Elecric Co., prime contractor to U. S. Atomic Energy Comn. for operation of Richland and Hanford Works, Oct. 19, rehabilitation 662 prefabricated houses, from L. E. Baldwin & F. Dunham, 3872 50 Ave. N. E., Seattle, $652,080, Est. $600,000. CD 10/11.

▲ **N. B., Moncton**—HOSPITAL UNIT—Hospital Bd., 13 King St., 6 story, 200-bed rein.-con. frame, brick hospital unit, from Parsons Constr. Co., Ltd., Imperial Block, Moncton, Approx. $2,078,963. CD 9/20.

Que., St. Hubert—BARRACK BLOCK—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., 180-man barrack block at R. C. A. F. Station, from Fortin & Lamothe Co., Ltd., 282 St. Marcel St., Ville St. Joseph, Drummondville, Approx. $500,000. CD 8/15.

CONTRACTS AWARDED

Calif., Stockton—WAREHOUSE UNITS—Stockton Port Dist., Stockton, four 40,000 sq. ft. 202x858 ft., wood frame, concrete warehouse units, incl. paving railroad spur tracks, to Shepherd & Green, 309 American Trust Bldg., $564,625. Bids 10/23. CD 10/9.

▲ † **D. C., Wash.**—BUILDING—General Services Admin., 18 and F Sts. N.W., Wash., 25, D. C., 4 story, part bsmnt., concrete, limestone with face brick in courts, composite roof with part tile promenade Red Cross District of Columbia Chapter House, 20 and E Sts. N.W., to George Hyman Constr. Co., 1010 Vermont Ave. N.W., $1,935,939. Bids 9/27, awarded 10/30. CD 10/2, under LB.

▲ **Fla., Gainesville**—DORMITORIES—State Bd. Control, Tallahassee, women's dormitories at University of Florida, Units A and B, to Geo. D. Auchter Co., foot of E. 56 St., Jacksonville, $1,260,099; Unit C, to C. A. Fielland, Inc., 107 N. Rome Ave., Tampa, $514,760. CD 1/6/49.

▲† **Idaho, Arco**—BUILDINGS, etc.—Westinghouse Electric Corp., Atomic Power Div., Box 1468, Pittsburgh, Pa., 133x155 ft. office and laboratory, 36x62x ft. gate house and office bldg., sewage treatment facilities, 180x80 ft. service bldg., 17-113 ft. pumphouse, oil storage tanks, etc., for Testing Facilities Sub-contract, 73-14-23, for Atomic Energy Comn., Idaho Falls, to M. J. Brock & Sons Inc., 2894 Rowena Ave., Los Angeles, Calif., $1,018,000. Bids 10/12. CD 10/19, under LB.

Ill., Pontiac—PIPING WORK—State, State Capitol, Springfield, piping work for new service tunnels and piling at Pontiac Branch of Illinois State Reformatory, to Peoria Piping & Equipment Corp., Peoria, $312,800. Awarded 10/25. CD 2/23/45.

Ill., Wolf Lake—HIGH SCHOOL—Shawnee Consolidated School Dist., Wolf Lake, 1 story, brick high school, to J. E. Williams Constr. Co., 6490 Page St., St. Louis, Mo., $553,784.

Kan., Manhatan—CONNECTING WING—State Bd. Regents, Topeka, general contract, connecting wing between agricultural bldgs., to Hugg Bros. Constr. Co., Fort Scott, $495,845. Bids 10/18. CD 10/11.

▲ **Md., Rockville**—OFFICE—Montgomery Co., 4 story, brick, rein.-con. Montgomery Co. Office and 3 story health wing, Jefferson and S. Perry Sts., to Byrne Organization, 2607 Connecticut Ave. N. W., Wash., D. C., $1,154,000. Bids 10/20, awarded 10/27. CD 10/27, under LB.

Md., Silver Spring—SCHOOL—Bd. Educ., Montgomery Co. Bldg., Rockville, Montgomery Blair High School addn., 501 Dale Dr., to Byrne Organization, 2607 Connecticut Ave. N. W., Wash., D. C., $719,000. Est. $700,000. Bids 10/12, awarded 10/27. CD 10/17, under LB.

▲ **Mass., Brockton**—SCHOOL—City, City Hall, West Junior High School, to Platt Constr. Co., 99 First St., Cambridge, $1,367,000. Bids 10/11. CD 10/25, under LB.

Mich., Dearborn—SCHOOL—City, Richard Smith, pres., Dearborn School Dist., 2 story, bsmnt., brick, concrete, steel Clara Bryant Junior High School, to Atkins-Fordon Co., 7360 W. Chicago St., Detroit, Approx. $500,000. Bids 10/4. CD 9/18.

▲ **N. Y., Mineola**—ADMINISTRATION—Bd. Supervs. Nassau Co., Old Court House, administration bldg. at fairgrounds, to Psaty & Fuhrman, 369 Lexington Ave., New York, Zone 17, $1,870,000. Bids 10/10. CD 10/13, under LB.

† **N. Y., New York**—HOSPITAL EXCAVATION, etc.—U. S. Eng., 80 Lafayette St., Zone 13, excav., grading and piles for Veterans Admin. Hospital, E. 23 St. and First Ave., CIVENG 30-075-51-30, to I. B. Miller Constr. Corp., 181-12 45 St., Long Island City, $594,460. Bids 10/23. CD 9/14.

Ore., Portland—GYMNASIUM, etc.—School Dist. 1, 631 N. E. Clackamas St., rein.-con. gymnasium and 8-room Roosevelt High School addn., to A. V. Peterson, 2827 N. E. Gilson St., $553,898. Bids 10/24, awarded 10/27. CD 10/6.

S. C., Bamberg—HOSPITAL—Bamberg County Memorial Hospital, Bamberg, hospital, to W. M. Fine, Spartanburg, $388,130. Bids 9/6. CD 9/21, under LB.

▲† **Tenn., Tullahoma**—BUILDINGS—U. S. Eng., Tullahoma, 2 buildings for Arnold Engineering Development Center's high-altitude engine test facilities, to Massman Constr. Co., 7400 Wilson Rd., and S. Patti Constr. Co., 1340 Admiral St., Kansas City, Mo., and MacDonald Constr. Co., 1310 S. Grand Blvd., St. Louis 4, Mo. **$4,127,458.** Awarded 10/5. CD 9/20, under LB.

▲ **Tex., Houston**—HOSPITAL, etc.—University of Texas, Texas Medical Center, M. D. Anderson Foundation, 2310 Baldwin St., 7 story brick, stone hospital for cancer research, air-conditioning, and 5 story, bsmnt., reinf.-con. frame and fdn., brick, stone out-patient bldg., air-conditioning to Farnsworth & Chambers, Inc., Box 74. **$5,210,185,** est. $3,250,000, and $2,385,000 est. $1,750,000 respectively. Bids 9/28. CD 10/3, under LB.

Va., Martinsville—SCHOOL—Henry Co., Martinsville, Collinsville School, Route 220, to C. M. Weber, Danville, **$339,814.** Bids 10/19. J. Coates Carter, Martinsville, archt. CD 9/29.

Va., Spotsylvania — SCHOOL — Spotsylvania Co., Court House, Robert E. Lee School, to L. C. Mitchell, Fredericksburg, **$364,800.** Bids 10/24. CD 10/13.

▲ **Wash., Seattle**—SCHOOL—School Dist. 1, 815 4 Ave. N., Casper W. Sharples Junior High School in southeast Seattle, to Poston Constr. Co., 2471 Aurora Ave., **$1,667,860.** Bids 10/10. CD 10/16, under LB.

N. B., Moncton—PUBLIC—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., 2 addns., bsmnt and 4 story, 90x80 ft. and 90x100 ft., steel, brick, stone public bldg. addns., to E. G. M. Cape & Co., 620 Cathcart St., Montreal, Que., Approx. **$990,000.** Bids 9/20. CD 9/27, under LB.

▲ **Que., Bagotville**—HOUSES—Central Mortgage & Housing Corp., 124 Guy St., Montreal, 200 houses, to Gaspard Archambault Ltd., 726 Atwater Ave., Montreal, Approx. **$1,500,000.** Bids 10/20. CD 10/10.

COMMERCIAL BUILDINGS

BIDS ASKED

Wis., Milwaukee—B.A. 11/14—Association of Marquette University for Women, 1120 W. Clybourn St., Zone 3, 3 story, bsmnt. H-shaped, 36x241 ft. and 44x52 ft. residence hall, E. Brielmaier & Sons Co., 735 N. Water St., Zone 2, archt.

Pa., Grove City—HOSPITAL—B.A. About 11/15—Grove City Hospital, Grove City, 2 story bsmnt., brick, steel hospital addn. $300,000. W. G. Eckles Co., New Castle, archt. CD 2/3/49.

N. Y., Brooklyn—CHURCH—B.A. 11/15—Sts. Cyril & Methodius Church, 119 Eagle St., Zone 22, 1 story church, 161-165 Eagle St. $275,000. CD 6/29.

La., Algiers—THEATER—B.A. 11/21—Powers Theater, Inc., Algiers, steel Class A, stadium type, masonry theater. Plans deposit $25. Patrick M. Allison & Assoc., 315 St. Charles St., New Orleans, archts.

▲ **Ill., Chicago**—APARTMENT—Bids Asked—Harris Pearlstein, Lake Shore Dr. and Barry St., Zone 14, 21 story, apartment, $2,500,000. Loebel, Schlossman & Bennett, 333 N. Michigan St., Zone 1, archts. CD 9/27, under LB.

Ill., Northlake (Br. Melrose Park)—SCHOOL—Bids Asked—St. John Baptist Church, 1 story, bsmnts. 17,000 sq. ft., structural steel, concrete, brick, stone school, $250,000. Barry & Kay, 53 W. Jackson St., Chicago, Zone 4, archts.

▲ **Ill., Peoria**—APARTMENT—Bids Asked—Associated Realty Co., 106 E. State St., 16 story, 200 unit, steel, brick, stone apartment $1,200,000. Simpson & Peck, 7917 Exchange Ave., Chicago, Zone 17, archts.

Mich., Detroit—CHURCH—Bids Asked—Wm. Fred Memorial Methodist Church, Warren St. and Asbury Park, 1 story, bsmnt., brick, stone church, Warren St. $250,000. Harold H. Fisher, 1605 Industrial Bank Bldg., archt.

SOON LETS CONTRACT

▲ **Mass., Springfield** — HOSPITAL — Wesson Maternity Hospital, 120 High St., soon lets contract 6 story maternity hospital, Pratt St. $1,250,000. Voorhees, Walker, Foley & Smith, 101 Park Ave., New York, N. Y., archts. CD 9/13.

Mass., Wilbraham — ATHLETIC — Wilbraham Academy, Main St., soon lets contract, 2 story, part bsmnt., 117x132 ft., brick, tile athletic bldg. $300,000. Roy D. Bassett, 1952 Albany St. W., Hartford, archt. CD 4/24/47.

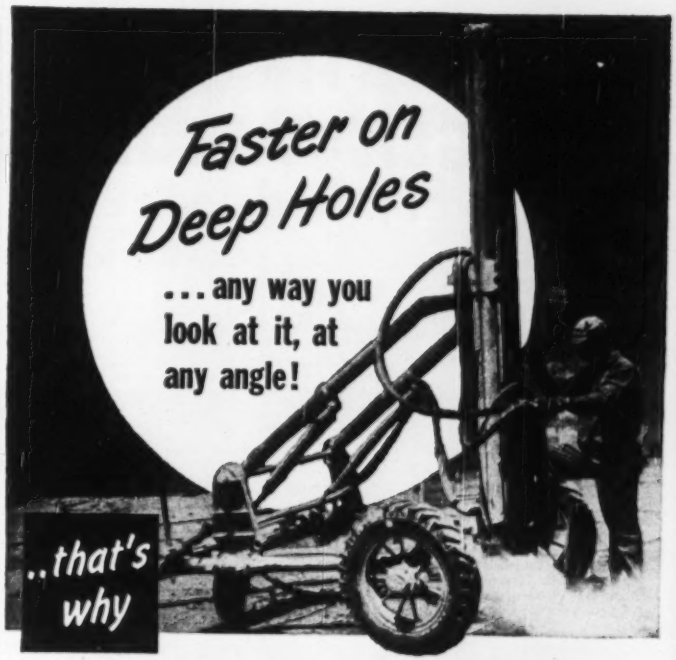
R. I., Bristol—SCHOOL, etc.—St. Elizabeth's Church, Rev. H. R. Rocha, pastor, Hood St., soon lets contract 1 story bsmnt., 2 story bsmnt., 70x175 ft. brick, school and parish hall, Wood St. Samud M. Morino, 108 Clarendon Ave., Providence, archt. CD 1/26.

Tex., Brownwood — LIBRARY — Howard Payne College, Brownwood, soon lets contract, library. $250,000. Will N. Noonan, 720 Travis Bldg., San Antonio, archt. CD 3/27.

Tex., San Antonio—LIBRARY—Trinity University, W. Ashby St., soon lets contract library. $250,000. Harvey P. Smith, Natl. Bank Commerce Bldg., B. C. Cocke, 3501 Broadway, and O'Neal Ford, Willow Way, Route 7, archts. Frank Drought, 117 W. Pecan St., San Antonio, Wm. Wilson Wurster, Dean University of California, Berke, Calif., engrs. CD 8/23/45.

LOW BIDDERS

▲ **Conn., Hartford**—LIBRARY—Trinity College, G. Keith Funston, pres., Hartford, 3 story, bsmnt., brick, steel library, South Campus, from Industrial Constr. Co., 120



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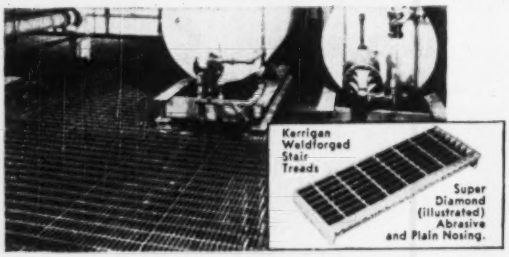

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Prospect Ave., $1,000,000. O'Conner & Kilham, 101 Park Ave., New York, N. Y., archts. CD 10/18.

Fla., St. Petersburg—CHURCH—First Methodist Church, c/o Archie G. Parish & Robert B. Crowe, archts., 213 Hall Bldg., Oct. 25, church, from Clyde J. Keys, 20 11 St. S., $946,494. CD 9/18.

Nev., Reno—OFFICE—Onslow S. Dodd, c/o Paul C. Overmire, archt., 79 Post St., San Francisco, Calif., 4 story, bsmnt. 50,000 sq. ft. rein.-con., steel frame commercial office, from A. J. Hopper Co., 243 Langton St., San Francisco, Calif., $625,726. CD 10/25.

▲ **N. J., Princeton**—HOSPITAL—Princeton Hospital, 253 Witherspoon St., Oct. 31, hospital addns., alterations, from John McShain, Inc., 17 St. and Spring Garden St., Phila., Pa., $1,017,200. Bids 9/19 rejected. CD 10/3, under LB.

N. C., Charlotte—NURSES HOME—Bd. Directors Presbyterian Hospital, Inc., John C. Erwin, chn., 200 Hawthorne Lane, Oct. 20, general contract 200 bed nurses' residence, from J. A. Jones Constr. Co., 209 W. 4 St., $643,500. CD 6/15.

▲ **Tex., Randolph Field (San Antonio)**—HOUSING—Dpt. of Air Force, Fourth Army Headquarters, Fort Sam Houston, rejected bids, construct, manage and finance 600 housing unit for military personnel. L.B. $5,000,000. CD 6/28, under LB.

CONTRACTS AWARDED

▲ **Calif., Cupertino**—RESIDENCES—Calor Constr. Co., Box 269, 161 residences, Greenleaf, Dunbar, Fargo, Hanford Gate, Beardon Drives. Owner builds. $1,127,000.

Calif., Palo Alto—RESIDENCES—Eichler Homes, 2001 El Caminio St., Palo Alto. 70 residences, Tennessee Lane, Carolina Lane, Charleston Rd., and Wilkie Way. Owner builds. $661,000.

▲ **Calif., San Francisco**—RETAIL STORE—Stoneson Development Corp., 3455 19 Ave., 3 story retail store. Owner builds. $2,000,000. Welton Becket, 5657 Wilshire Blvd., Los Angeles, archt. L. F. Robinson, 3455 19 Ave., engr. CD 1/24.

▲ **Ill., Chicago**—OFFICE, etc.—Owner, c/o Arthur Heda, archt., 1809 Balmoral St., Zone 40, 2 story 90,000 sq. ft. office and storage, to J. Emil Anderson & Son Co., 18-09 Balmoral St., Zone 40, $1,000,000. Awarded 10/20.

Ill., Monmouth—DORMITORY—Monmouth College, Monmouth, 3 story, rein.-con., brick men's dormitory, to Pere Anderson & Co., 10827 S. Western St., Chicago, Zone 43, $400,000. Awarded 10/18.

Ky., Louisville—RESIDENCES—Emery Kinkead Constr. Co., 614 E. Broadway, one hundred and twenty-eight residences. Owner builds, $960,000, J. Clay Murphy, 614 E. Broadway, archt.

Mich., Albion—HOSPITAL—Bd. Trustees, Sheldon Memorial Hospital, 3 story, brick, steel, concrete hospital, to Phelps Wagner Builders, Battle Creek, Approx. $401,416. Bids 10/11. CD 9/19.

Mich., Traverse City—HOSPITAL—Bd. Trustees, James Decker Munson Hospital, Traverse City, 3 story, brick, steel, concrete hospital addn., to Christman Co., 408 Kalamazoo Plaza, Lansing, $707,767. Bids 8/16. CD 9/1.

▲ **N. J., Long Branch**—HOSPITAL WING—Bd. Governors, Long Branch, 128-bed wing Monmouth Memorial Hospital, to Fred J. Brotherton, 185 Atlantic Ave., Hackensack, $1,400,000. Epple & Seamon, 901 Broad St., Newark, archts.

N. Y., Brooklyn—APARTMENT—550 East 21 St., Inc., 550 Flatbush Ave., Zone 25, 6 story apartment, 556 E. 21 St. Owner builds. $450,000. CD 9/11.

N. Y., Brooklyn—CHURCH—St. Ephrems Roman Catholic Church, 7415 Fort Hamilton Parkway, church, 7413-23 Fort Hamilton Parkway, to Frank Driesler, Inc., 110-18 Jamaica Ave., Richmond Hill, $750,000. CD 7/13.

▲ **N. Y., Forest Hills**—APARTMENT—Forest Properties, c/o Srellig & Finkelstein, archts., 153 Pierrepont St., Brooklyn, Zone 2, 6 story apartment, 71 Ave. and 110 St. Owner builds. $1,350,000. CD 9/7.

N. Y., Laurelton—HOUSES—Junction Homes, c/o David Levinson, archt., 92-32 Union Hall St., Jamaica, 24 one-family houses, 130 Ave., 232, 233, 234, 235 and 236 Sts. Owner builds. Approx. $250,000.

N. Y., New York—APARTMENT—Clifford Apartments, Inc., 750 Grand Concourse, Zone 51, 6 story apartment, Grand Concourse and Clifford Pl. Owner builds. $500,000. CD 7/13.

N. Y., South Ozone Park—HOUSES—Leland Homes, c/o David Levinson, archt., 92-32 Union Hall St., Jamaica, 32 one-family houses, 143 St. and Linden Blvd. Owner builds. Approx. $256,000.

N. Y., Whitestone—HOUSES—Maren Homes, c/o William Sambur, archt., 168-16 Jamaica Ave., Jamaica, 27 one-family houses, Fifth Ave. between 149 St. and 147 Pl. Owner builds. Approx. $250,000.

Tenn., Memphis—OFFICE, etc.—Ozborn-Abston & Co., Dudley St., and Crowell Rd., brick, stone, steel office and warehouse, to L & M Constr. Co., Vance St., Approx. $500,000. Northern & Windrom, 582 Court St., Zone 1, archts. Griffith C. Burr, 512 Adams St., Zone 3, engr.

Tenn., Memphis—ACADEMY—St. Catherines Academy, c/o Marr & Holman, archts., Stahlman Bldg., Nashville, brick academy, concrete fdn., to Seth E. Giem & Assoc., Porter Bldg., Approx. $660,000.

Tex., Amarillo—HOUSING—Heights Construction & Development Co., Amarillo, housing. Owner builds. $290,000. CD 10/27.

Tex., Houston—SHOPPING CENTER—George Haikin, 2107 North Blvd., shopping center, to Andrew McLean, 2031 Alta Vista St. $286,000. CD 10/26.

Tex., Houston — DWELLINGS — McMillan Constr. Co., 7948 Harrisburg St., 50 dwellings. Owner builds. $375,000. CD 10/27.

Tex., Houston — DWELLINGS — Plumb-Mitchell Builders Inc., 4550 Griggs Rd., 22 addnl. dwellings. Owner builds. Approx. $265,000. CD 10/27.

Tex., Houston—HOUSING—Southern Builders, Inc., 1200 Givens St., housing. Owner builds. $325,000. CD 10/27.

Tex., Pasadena—DWELLINGS—George W. Batton Co., 1620 Mo St., Houston, 50 dwellings, $390,000; 45 dwellings, $360,000, in Berkshire Village area, own forces. CD 3/2.

▲ Alaska, Anchorage—APARTMENTS—L and L Constr. Co., 308 Lowman Bldg., Seattle, Wash., E and E Apartments, $1,314,800; Hollywood Vista Apartments, $4,230,500, day labor. E. W. Morrison, 719 2nd Ave. Bldg., Seattle, Wash., archt. CD 10/6.

INDUSTRIAL BUILDINGS

BIDS ASKED

Ga., Newman—WAREHOUSE, etc—B.A. 11/14—Coweta-Fayette Electric Membership Corp., c/o Southern Eng. Co., archt., 1000 Crescent Ave. N.E., Atlanta, warehouse and office. Extended date. CD 10/18.

Ont., Toronto—FACTORY—B.A. About 11/15—I. M. Saunders, archt., 345 Church St., 2 story, 30x100 ft., structural steel, brick factory for Frank Kirk, 241 King St., E., Approx. $175,000.

Ont., London—PLANT—B. A. About 11/15—General Motors Diesel Corp., W. Rippingille, mgr., Oxford St. E., 2 story, 82x202 ft. brick, steel plant addn. $350,000.

Ont., Toronto—PLANT—B.A. 11/15—B. Brown, archt., 21 Dundas Square, 3 story, part bumnt., 90x110 ft., plant, King St. N. near Bathurst St., for Ontario Hosiery Mfg. Co., 690 King St. W., Approx. $450,000.

N. C., Waynesville—WAREHOUSE, etc.,—B.A. 11/16—Haywood Electric Membership Corp., c/o Southern Eng. Co., archt., 100 Crescent Ave. N. E., Atlanta, Ga., warehouse and office. Extended date. CD 10/20.

Ill., Chicago—FACTORY—Bids Asked—Club Aluminum Products Co., 1208 Fullerton St., Zone 14, 2 story, bsmnt., 34 000 sq. ft., rein.-conc. factory addn. R. H. Maveety, 53 W. Jackson St., Zone 4, engr.

Ill., Skokie—FACTORY, etc.—Bids Asked—Santucci Constr. Co., 5044 Carol St. 1 and 2 story, 30,000 sq. ft. factory, warehouse and office, $180,000. Frank J. Serpico, 4800 Milwaukee St., Chicago, Zone 30, archt.

▲ Tex., Borger—PLANT—Bids Asked—Phillips Chemical Co., Borger, carbon-black plant. Approx. $3,500,000. CD 10/27.

Tex., Houston—PLANT—Bids Asked—Goodall Rubber Co. of Texas, 1606 Maury St., rubber tire and storage plant. Harvin C. Moore, 2009 W. Alabama St., archt. CD 10/16.

Ont., Toronto—FACTORY, etc.—Bids Asked—Markad Co., 430 King St. W., 50x150 ft. brick, cut stone factory and office. Approx. $125,000. E. I. Richmond, 455 Spadina Ave., archt.

SOON LETS CONTRACT

Ill., Chicago—SUB-STATION—Commonwealth Edison Co., 72 W. Adams St., Zone 3, soon lets contract, substation, 7675 S. South St., Chicago Ave. $90,000.

▲ Ill., Waukegan—GENERATING UNIT—Public Service Co., Greenwood at Lake Michigan St., soon lets contract superstructure Generating Unit 9. $8,000,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Zone 3, engrs. CD 3/28.

S. C., Charleston—PLANT—Simons & Lapham, archts., 17 Broad St., soon lets contract, newspaper publishing plant for Charleston Evening Post and The News & Courier, 134 Meeting St.

Tex., Dallas—SALES, etc.—Dick Price Motor Co., 2100 N. Harwood St., soon lets contract auto sales, service shop. $100,000. Wiltshire & Fisher, Merchants State Bank Bldg., archts. CD 9/13.

LOW BIDDERS

Fla., Miami—PLANT—Du Pont Heights Industrial Center, c/o Alfred Obeler, archt., 4250 Chase Ave., Miami Beach, mfg. plant, from Paramount Constr. Co., 1470 N. W. 21 St., $150,650. CD 10/18.

La., Baton Rouge—WAREHOUSE, etc.—Glazer Wholesale Drug Co., 1001 River Rd., warehouse and office, from L. A. Spedale, Box 5117, $80,200, Geo. W. Edwards, 1508-A Cochran St., Dallas, Tex., archt.

Tex., Carrollton—AUTOMOTIVE—Vandergriff Motors, Carrollton, Oct. 28, masonry automotive building, repair shop, parts, sales, from Miller & Norton, Box 4667, Dallas, $102,480. Est. $85,000. CD 10/25.

Tex., Houston—BAKERY—J. Weingarten, Inc., 808 Prairie St., bakery, from Schneider Constr. Co., 3004 W. Dallas St., $153,365. CD 9/26.

CONTRACTS AWARDED

▲ Ala., Birmingham — COKE OVENS — Sloss-Sheffield Steel & Iron Co., $131 1 Ave. N., 30 coke ovens at North Birmingham By-Products plant, to Koppers Co., Inc., Koppers Bldg., Pittsburgh, Pa., $2,000,000. CD 10/6.

Ala., Birmingham—BLAST FURNACE FOUNDATIONS—Woodward Iron Co., Woodward, concrete foundations for blast furnaces, to Rust Eng. Co., Exchange Bldg., Approx. $100,000.

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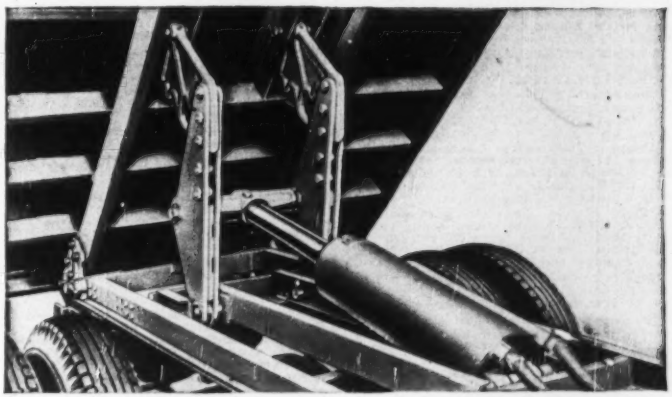

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Ala., Montgomery—MILL—Pennsylvania Salt Co., c/o contractor, mill addn., to Bear Bros., 25 E. Jefferson St., $80,000.

Calif., Azusa—SHOP—Lucky Lager Brewing Co., 819 N. Vernon Ave., 24,000 sq. ft. bottle shop addn., to Cahill Constr. Co., 206 Sansome St., San Francisco, $245,000. Meyer & Evans, Kohl Bldg., San Francisco, engrs.

▲ **Calif., El Segundo**—WAREHOUSE, etc.—North American Aviation Inc., 5601 Imperial Hy., Inglewood, 2 warehouses, 2 fabrication bldgs., steel frame, to Vinnell Co. Inc., 1145 Westminister Ave. Alhambra, $1,250,000. Awarded 10/24.

Calif., Inglewood—STORAGE—Bekins Van & Storage Co., 1335 S. Figueroa St., Los Angeles, rein.-con. storage bldg., to George W. Carter Co., 1721 W. Olympic Blvd., Los Angeles, $160,000. C. Deuel & George F. Smith, 3806 Beverly Blvd., archts., and Chester W. Comeau, 3806 Beverly Blvd., engr., both Los Angeles.

Calif., Los Angeles—WAREHOUSE—Gallen Kamps Stores Co., 535 S. Broadway, 1 story, 83x380 ft., rein.-con. warehouse, to Myers Bros., 3407 San Fernando Rd., $125,000. Perleter & Soring, 108 W. 6 St., engrs.

▲ **Conn., Naugatuck**—FACTORY—U. S. Rubber Co., Maple St., factory, Bldg. 5, to W. J. Megin, Inc., 51 Elm St., Naugatuck, $1,000,000. CD 4/20.

Ga., Columbus—MILL—Columbus Fiber Mills, 1120 10 Ave., mill, to Williams Constr. Co., P.O. Box 1039. Approx. $75,000.

Ga., Greensboro—MILL—Mary-Lelia Cotton Mills, Greensboro, mill addn., to Newman Constr. Co., La Grange, Approx. $75,000. CD 10/17.

Ill., Bloomington—MILL—Funk Brothers Seed Co., Bloomington, soybean processing mill, to John Felmley Co., Bloomington, approx. $750,000. R. W. Booker Assocs., 804 Pine St., St. Louis, Mo., engrs.

Ill., Chicago—FACTORY—Komon Tobacco Co., 1542 N. Ashland St., Zone 22, steel, concrete, brick factory, to Schillmoeller & Kroeft, 3959 Lincoln St., Zone 13, $68,000. Awarded 10/25. Geo. L. Tucker, 5877 N. Kilbourn St., Zone 30, archt.

Ill., Chicago—FACTORY—United Wheel & Stamping Co., 2756 W. 115 St., Zone 43, 1 story, bsmnt., 11,000 sq. ft. factory, to Tieman Constr. Co., 3021 W. 111 St., Chicago, Zone 43, $77,000. Awarded 10/25. H. D. Clary, 453 W. 63 St., Zone 21, archt.

Ill., Elgin—FACTORY—Chicago Metal Hose Co., 840 N. River Rd., factory addn., to Illinois Hydraulic & Constr. Co., 20 N. Crystal St., $100,000. Awarded 10/16.

Ill., Momence—FACTORY, etc.—Tuthill Spring Co., 760 W. Polk St., Chicago, Zone 7, 1 and 2 story, 20,000 sq. ft. face brick factory and office, to Grady & Wagner Constr. Co., 5211 Van Buren St., Hammond, $125,000. Awarded 10/8. CD 10/24.

Ill., North Chicago—PLANT—Fansteel Metallurgical Corp., 2200 Sheridan Rd., 2nd floor plant addn., to John Griffeths & Son Co., 228 N. LaSalle St., Chicago, Zone 1, $100,000. Awarded 10/24. A. Epstein & Sons Co., 2011 Pershing Rd., Chicago, Zone 9, archts.

Ill., St. Charles—PLANT—Chronicle Publishing Co., E. Main St., 20,000 sq. ft.; publishing plant, to A. F. Fairbank, 614 Joliet Rd., West Chicago, $90,000. Awarded 10/17.

Ky., Owensboro—PLANT—General Electric Co., Owensboro, mfg. plant for radio tubes, to Struck Constr. Co., 147 N. Clay St., Louisville. $670,000. Bids 10/16, awarded 10/23. CD 8/14.

Mass., Melrose—PLANT, etc.—Commercial Filters Corp., 18 W. Third St., South Boston, 1 story, 300x360 ft. brick, concrete plant, 2 story, 56x200 ft. office, Main St., to Morton C. Tuttle Co., 862 Park Square Bldg., Boston, $150,000. Waitz & Amberly, 120 S. Common St., Lynn, archts. R. D. Vanderweil, 9 Newbury St., Boston, engr.

Mich., Carrollton—PLANT—Harris Locker Plant, Inc., Carrollton, 2 story, brick, masonry plant addn., to Arthur Vollmer Constr. Co., 222 N. Bates St., Approx. $70,000. CD 9/19.

Mich., Saginaw—PLANT—Bastion Brothers Printing Co., 608 Lapeer St., 2 story, 15,000 sq. ft. masonry plant addn., Lapeer St., to Arthur Vollmer Constr. Co., 222 N. Bates St., $85,000. CD 10/4.

Mich., Three Rivers—FACTORY—Precision Spring Co., Three Rivers, 1 story, brick, masonry factory, to Rudy-Sackett Co., 13103 W. Chicago St., Detroit, Approx. $85,000.

Minn., Red Wing—WAREHOUSE, etc.—Red Wing Shoe Co., W. D. Sweasy, Red Wing, general contract 2 story, 80x160 ft., structural steel, masonry warehouse and factory addn., to Meyer Machine Shop, Red Wing, Est. approx. $68,000.

Minn., St. Paul—WAREHOUSE, etc.—Rihm Motor Co., 1641 University Ave., general contract 2 story, 150x150 ft. warehouse and garage, 586 Cleveland Ave. to J. Stepp, 485 Earl St., $100,000.

N. J., Highland Park—PLANT—J. O. Ross Eng. Corp., 350 Madison Ave., New York, N. Y., 75,000 sq. ft. plant on main line of Pennsylvania R.R., to H. K. Ferguson Co., 19 Rector St., New York, N. Y., approx. $650,000. Frank Grad & Sons, 187 Market St., Newark, archts.

▲ **O., Urbana**—PLANT—Liquid Carbonic Co., 3100 S. Kedzie St., Chicago 23, Ill., carbon dioxide plant, to Walter Kidde Constr. Co., 140 Cedar St., New York, N. Y., $1,000,000. CD 10/12.

Ore., Portland—WAREHOUSE—Grinnel Co. of the Pacific, Lumbermen's Bldg., 178x252 ft. warehouse and shop, N. W. 29 and Yeon Sts., to Henry Mason, 2206 N. W. Thurman St., $330,000. Bids 10/19. CD 10/16.

S. C., Mohawk—PLANT—Utica and Mohawk Cotton Mills, Inc., c/o contractor, mfg. plant to Daniel Constr. Co., 429 N. Main St., Greenville, Approx. $300,000.

Tenn., Memphis—WAREHOUSE—John Deere Plow Co., c/o contractor, warehouse to Henry C. Beck Co., First Natl. Bank Bldg., Atlanta, Ga. Approx. $320,000.

Tenn., Memphis—TERMINAL—Herrin Transportation Co., c/o contractor, truck freight terminal, to P. W. Jameson, 611 N. Holmes St. $68,312.

Tenn., Nashville—WAREHOUSE, etc.—Balton & Cummings, c/o contractor, warehouse and office, to Allan Murphy, Murfreesboro Rd., Approx. $75,000.

Tex., Dallas—PLANT—Trammell Crow, 1301 Broom St., plant, to McFaddin & Miller Constr. Co., 2900 Taylor St., $76,500.

Tex., Dallas—PLANT—Martin News Agency, 613 N. Pearl St., news plant, to Trinity River Constr. Co., Construction Bldg., $71,125. M. C. Kleuser, 2816 McKinney St., archt.

Tex., Houston—SHOP—W. F. Burge Co., 6825 Academy Dr., shop Owner builds. $79,000.

Tex., Houston—SHOP—Continental Business System, Inc., 300 Travis St., shop, own forces. Approx. $75,000. Hucker & Jones, Amarillo, engrs.

Tex., Houston—WAREHOUSE—General Chemical Div. of Allied Chemical & Dye Corp., 3909 Capitol St., warehouse, to R. E. Sullivan, 1st. Natl. Bank Bldg., $86,116.

Tex., Houston—INDUSTRIAL—Texas Construction Materials Co., 2905 Miliam St., 2 story, steel industrial bldg., concrete slab fdn., to O. C. Peterson & Son, Pasadena, $83,315. Bids 7/28. CD 7/25.

Tex., Snyder—FREIGHT TERMINAL—Merchants Fast Motor Lines, Inc., 1300 S. Lamar St., Dallas, freight terminal, own forces. $85,000.

▲ **W. Va., Glasgow**—PLANT—American Gas & Electric Co., and Appalachian Electric Power Co., 301 Virginia St. E., Charleston plant bldgs. and structures for steam electric power plant, to Sollit Constr. Co., South Bend, Ind., $3,000,000. CD 9/5, under CA.

Ont., Cardinal—WAREHOUSE—Canada Starch Co. Ltd., Cardinal, 70x160 ft., concrete, steel, brick warehouse at plant, to Dodge Constr. Co., Bridge St., Approx. $175,000. J. C. Day, 1434 St. Catherine St. W., Montreal, Que., engr. CD 7/18/45.

Ont., Fort Erie—SHOP—Horton Steel Works Ltd., 40 Jennet St., Fort Erie West, 1 story, 80x200 ft., concrete, steel main shop addn., to Standard Steel Constr. Co. Ltd., Welland, Approx. $100,000.

Ont., Iroquois Falls—LOCOMOTIVE SHED—Abitibi Power & Paper Co. Ltd., 408 University Ave., Toronto, 80x192 ft., cement block locomotive shed at plant, to George E. Knowles Ltd., 119 Pine St. S., Timmins, Approx. $80,000.

Ont., Ottawa—PLANT—R. L. Crain Ltd., 190 Richmond Rd., 2 story, printing plant exten., to Doran Constr. Co. Ltd., 5 Concord St., Approx. $310,000. T. Pringle & Son, 585 McGill St., Montreal, Que., engrs. CD 9/28.

Ont., Sudbury—BUS GARAGE, etc.—Sudbury & Copper Cliff St. Ry., 4 Durham St. N., 1 story, 105x120 ft., concrete bus garage and administrative offices, to All-Steel Buildings Ltd., 777 Jane St., Toronto, Approx. $70,000. Awarded 10/26.

Que., Montreal—PLANT—Congoleum Canada Ltd., 3700 St. Patrick St., 3 story, 50x120 ft., concrete, structural steel, brick plant addn., to Concrete Constr. Ltd., 1082 Decarie Blvd., Approx. $300,000. Wood & Langston, 4444 Sherbrooke St., archts.

UNCLASSIFIED

BIDS ASKED

Georgia—RURAL DISTRIBUTION LINES, etc.—B.A. 11/14—Colquitt County Rural Electric Co-operative, Moultrie, 4 mi. 66 kv rural distr. lines, 15.4 mi. new distr. lines, 23.4 distribution conversion and one 1500 kva. sub-station in Brookes and Lowndes Counties. Plans deposit $15. E. P. McLean Eng. Co., 815 S. Main St., Moultrie, engr. CD 6/4/48.

N. Y., New York—PARK RECONSTRUCTION—B.A. 11/14—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, reconstruction playground in St. Nicholas Park Exten., east of St. Nicholas Terrace, opposite W. 129 St., Contr. No. M-78-150. Plans deposit $20. CD 10/18/44.

† **Maryland**—RAILROAD—B.A. 11/15—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., removing, replacing 20,000 cross ties on railroad for distance of 40 mi., from U. S. Naval Air Station, Patuxent River to Brandywine Spec. 25759. Plans deposit $10.

New York—TRAFFIC SIGNAL SYSTEM—B. A. 11/15—Henry A. Cohen, dir. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, traffic signal sys. 1.42 mi. Canandaigua City-Main St. FAC49-7. Proj. No. U338 (5), Contr. No. FAC50-13. Ontario Co. $9,000. Plans deposit $10.

Pa., Lock Haven—FIRE TOWERS—B. A. 11/15—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, electrical work for fire towers for Administration Bldg. at Lock Haven State Teachers College. $50,000. Plans deposit $2.50 each. George M. D. Lewis, 445 Kressler Court, Scranton, archt. A. F. Jones, c/o owner, ch. engr.

South Dakota—RURAL DISTRIBUTION LINES—B. A. 11/15—Rosebud Electric Assn., Gregory, 391.2 mi. rural distr. lines, Gregory, Lyman and Tripp Counties. $425,000. Raymond H. Reed & Co., Columbus, Neb., engrs. CD 7/10.

† **Va., Portsmouth**—CYLINDER STORAGE SHED—B.A. 11/15—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, 92x120 ft. cylinder storage shed at U. S. Naval Shipyard. Spec. 25274. Plans deposit $10.

Que., Baie St. Paul—HARBOR IMPRVS.—B.A. 11/15—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., harbor imprvs. Approx. $235,000. Plans deposit $25. R. Blais, c/o owner, engr.

Que., Havre St. Pierre—WHARF IMPRVS.—B.A. 11/15—Acting Secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf imprvs. Approx. $250,000. Plans deposit $50. R. Blais, c/o owner, engr. CD 3/2.

Que., Tadoussac—WHARF—B.A. 11/15—R. Fortier, Dpt. P. Wk., Hunter Bldg., Ottawa, Ont., wharf, $200,000. CD 3/18/49.

South Dakota—RURAL DISTRIBUTION LINES—B. A. 11/16—Rosebud Electric Assn., Gregory, 319.2 mi. rural distr. lines, Gregory and Tripp Counties. $335,000. Raymond H. Reed & Co., Columbus, engrs. CD 7/10.

Tex., Amarillo—SWIMMING POOL, etc.—B. A. 11/17—City, swimming pool and bathhouse. $150,000. Ward & Chisholm, 721 W. 7 St., archts. Paddock Eng. Co. of Texas, 3727 Atwell St., Dallas, engr. CD 9/11.

Okla., Vinita—GENERATING UNIT—B.A. 11/20—Grand River Dam Auth., Vinita, 16,000 k.v.a. generating units and accessories for Pensacola Dam of Grand River Dam Auth. $250,000. Plans deposit $30. W. R. Holway, 302 E. 18 St., Tulsa, engr.

† **Arizona-Nevada**—TRANSFORMERS, etc.—B.A. 11/21—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point f.o.b. cars Kingman, Ariz., transformer, generator set, with accessories, control equipment, for Davis Power Plant, Davis Dam Proj., Spec. DS-3214. L. N. McClellan, ch. engr.

Ill., Chicago—MONUMENT—Bids Asked—Chicago Park Dist. 425 E. 14 St., Zone 5, monument of Alexander Hamilton placed on 3 stage (level) base. $350,000. Noel E. Flint, 333 N. Michigan St., Zone 1, archt. CD 6/11/45.

LOW BIDDERS

† **Arizona-Nevada**—TRANSFORMER—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., cancelled bids to have been opened Nov. 2, transformer for Prescott Sub-station, Davis Dam Proj., Spec. 3195. CD 9/27.

Calif., Long Beach—STORAGE SHED—Long Beach Harbor Dpt., 1333 W. Embarcadero St., Oct. 24, steel storage shed at Berth 52, 53, 54, Pier 2, Item I, fabrication and erection structural steel, from Bethlehem Pacific Coast Steel Corp., 3391 E. Randolph St., Vernon, $140,000; Item 3, installing roofing, from Walter Steyer Co., 3433 Malt Ave., Los Angeles, $61,700. CD 10/1

Calif., Shasta City—FISH HATCHERY—State Div. Architecture, P. Wks. Bldg., Sacramento, Oct. 24, Mount Shasta Fish Hatchery, Program 2, incl. 2 sheet aluminum bldgs., refrigeration room, pipe line, etc., from Carl N. Swenson Co., Box 558, San Jose, $131,457. CD 10/10.

Ky., Louisville—STATE FAIR GROUNDS—Commonwealth of Ky., State Fair Bd., McDowell Bldg., Oct. 25, clearing, grading site of New State Fair Grounds, from Ruby Constr. Co., Madisonville, $158,062. Fred Eiswick, Commerce Bldg., archt. Maurice Miller, McDowell Bldg., engr. CD 12/23.

La., New Orleans—GAS SYSTEM—New Orleans Housing Auth., 1111 Elaine Ave., gas sys. for Lafitte Ave. Housing Proj. LA 1-5, from A. N. Goldberg, Inc., 623 Maison Blanche Bldg., $205,000. CD 10/9.

N. Y., Bear Mountain—SKATING RINK—Bureau Contracts & Accounts, Albany, Oct. 25, roller skating rink at Bear Mountain State Park, from Harry Hershon Co., Inc., 1860 Broadway, New York, Zone 23, $662,887. CD 10/24, under LB.

N. Y., Hamlin—PARK BLDGS—Bureau Contracts & Accounts, Albany, 2 buildings at Hamlin Beach State Park, from Le Chase Constr. Corp., 29 Saratoga Ave., Rochester, $112,165.

N. C., Mt. Airy—SWIMMING POOL, etc.—Reeves Memorial Foundation, c/o Charles M. Graves, engr., 795 Peachtree St., N.E., Atlanta, Ga., Oct. 24, swimming pool and community center from Hickory Constr. Co., Hickory, $413,287. CD 10/19.

N. C., Raleigh—SWIMMING POOL, etc.—State School for Blind & Deaf, E. N. Peeler, supt., Raleigh, rejected bids Oct. 11, swimming pool and locker rooms alterations, L. fi., $62,747. CD 10/20, under LB.

▲ **Wis., Milwaukee**—STADIUM—Milwaukee Co. Park Comn., Milwaukee, Oct. 26, piling and foundations for stadium, from Thomas H. Bentley & Son, 3131 W. Mill Rd., Zone 9, $167,700***general contract, from Hunzinger Constr. Co., Station K, Milwaukee, Zone 13, $1,509,579***plumbing, from Wenzel & Hencoch Co., 1524 N. 27 St., Zone 8, $199,993***electrical work from Magaw Electric Co., 728 N. Jefferson St., Zone 2, $314,700. CD 9/27.

CONTRACTS AWARDED

Arizona—RURAL DISTRIBUTION LINES—Trico Electric Co-operative, Inc., Tucson, 215 mi. rural distr. lines, Pima Co., to J. & J. Constr. Co., 1801 Petroleum Bldg., Oklahoma City, Okla., $267,908. CD 2/6/47.

Fla., Key West—MOTOR COURT—Chas. Krcilek, c/o Wm. F. Brown & Assocs., archts., 1644 S. Bayshore Dr., Miami, motor court. Owner builds, $50,000.

Fla., Miami—MOTOR COURT—J. E. Jarkesy, c/o contractor, motor court, to Joseph G. Moretti, Inc., 2401 N. W. 7 St. Approx. $100,000.

Illinois—RURAL DISTRIBUTION LINES—M.J.M. Electric Co-operative, Inc., 257 N. Broad St., Carlinville, 134.37 mi. rural distr. line and sys. imprvs., Macoupin Co., to Hulcher Service Lines, Virden, $393,203. Rural Line Engineers, 440 S. Brentwood Blvd., Clayton, 5, Mo., engrs.

Ind., South Bend — DRIVE-IN THEATRE — Lewis P. Cechovety et al c/o Avon Theatre, South Bend, drive-in theatre, south of West Chippewa Ave. east of Pennsylvania R.R. tracks, separate contracts. $50,000.

Kansas—RURAL DISTRIBUTION LINES—Butler Rural Electric Co-operative Assoc., El Dorado, 190 mi. rural distr. lines in Butler Co., to Thompson, Haight & Keister, 200e N. Portland Ave., Oklahoma City, Okla., $235,280. Richardson Electrical Eng. Co., P. O. Box 263, Solomon, engr. CD 2/2.

Kansas—RURAL DISTRIBUTION LINES—Kaw Valley Electric Co-operative, Inc., 1513 Lan St., Topeka, 169.55 mi. rural distr. lines and sys. imprvs. in Shawnee Co., to Arthur Tucker Electric Co., 619 Jackson St., Topeka, $264,434. CD 7/27.

Kansas—RURAL DISTRIBUTION LINES—Radiant Electric Co-operative, Inc., Fredonia, 134.9 mi. rural distr. lines and sys. imprvs., Wilson Co., to Kerns-Ramey Constr. Co., Inc., P. O. Box 6, Amarillo, Tex., $188,306. Richardson Electrical Eng. Co., P. O. Box 263, Solomon, engr. CD 6/19.

Ky., Campbellsville—DRIVE-IN THEATER—Henry Whitlock et al, Campbellsville, drive-in motion picture theater, Columbia Hy., 1½ mi. from city, separate contracts. $50,000.

▲ Mich., Detroit—TELEVISION STATION—WWJ-TV Detroit News, 622 West Lafayette St., 2 story, 130x150 ft., brick, steel television station, Lafayette and Third Aves., to Durin & Armstrong, Inc., 2041 Fenkel St. $1,000,000. Giffels & Vallet, Inc., 1000 Marquette Bldg., archt.

Missouri—RURAL DISTRIBUTION LINES—Co-Mo. Electric Co-operative, Tipton, 253.7 mi. rural distr. lines and 24.69 mi. conversion, Cooper Co., to L. P. & H. Constr. Co., Linton, Ind. $122,765. Bids 10/12. CD 8/14.

Missouri—RURAL DISTRIBUTION LINES—Grundy Electric Co-operative, Trenton, 321.5 mi. rural distr. lines, Grundy Co., to Hoak Constr. Co., 621 23 St., Des Moines, Ia. $403,172. Frank Horton & Co., Lamar, engrs. CD 7/17.

Missouri—RURAL DISTRIBUTION LINES—Osage Valley Electric Co-operative Assoc., Butler, 268.4 mi. rural distr. lines and sys. imprvs. in Bates, Benton, Henry, St. Clair and Vernon Counties, to Woodrow & Polk Constr. Co., Purcell, Okla., labor $105,080, material 268,000, total $373,080. Bids 8/23. CD 8/10.

Nebraska—RURAL DISTRIBUTION LINES—Eastern Nebraska Public Power Dist., Syracuse, 72 mi. rural distr. lines, Sarpy, Cass, Otoe, Nemaha and Richardson Counties, to Elliott Constr. Co., Redick Tower, Omaha, $483,000. Bids 10/25. CD 10/6.

Nebraska—RURAL DISTRIBUTION LINES—Niobrara Electric Membership Assoc., Sheridan, 556.3 mi. rural distr. lines, Sioux, Box Butte, Dawes, Sheridan and Cherry Counties, to Triple H. Constr. Co., Linton, Ind., $164,453. Bids 10/26. CD 10/11.

New Mexico—RURAL DISTRIBUTION LINES—Central New Mexico Electric Co-operative, Inc., Mountainair, 473 mi. rural distr. line and sys. imprvs., Lincoln Co., to Basanda Constr. Co., 2925 N. W. 39 Street Terrace, Oklahoma City, 7, Okla., $633,445. Hollis W. Harris, 711 Kentucky Ave., Amarillo, Tex., engr. CD 2/23.

Oklahoma—RURAL DISTRIBUTION LINES—Northwestern Electric Co-operative, Inc., Woodward, 328.5 mi. rural distr. lines, Woodward Co., to Sisco Electric Co., P. O. Box 88, Conroe, Tex., $298,926. C. H. Guermsey & Co., 1414 N. Robinson St., Oklahoma City, Zone 3, engrs. CD 7/14.

Oregon—RURAL DISTRIBUTION LINES—Benton-Lincoln Electric Co-operative, 561 Van Buren St., Corvallis, 58.29 mi. V.2/12.5 kv distr. lines, Lane, Linn and Benton Counties, to Lebanon Electric Co., Lebanon, $102,661. Bids 10/24. CD 10/6.

Tex., Gladewater—BASEBALL PARK—City, baseball park unit, own forces. Approx. $55,000. Otto Staerker, Gladewater, and Joe E. War, Nacol Bldg., Wichita Falls, engrs. CD 1/9.

Tex., Longview—PARK, etc.—City, park and playgrounds, own forces. $54,000. CD 8/31.

Newfoundland, Bonavista—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., deep water wharf, to North Shore Constr. Co. Ltd., 1410 Stanley St., Montreal, Que. Approx. $190,000. Bids 9/20. CD 9/13.

▲ Ontario—GAS PIPE LINE—Union Gas Co. of Canada Ltd., 48 Fifth Ave., Chatham, 63 mi., 12 in. pipe, to storage fields, Mandonfield, steel, to Steel Co. of Canada Ltd., 7 Wilcox St., Hamilton; laying pipe, to Shaw Constr. Co. Ltd., 530 Vidal St., Sarnia. Total est. $3,000,000.

Que., Montreal East—PUBLIC BATHS—Municipality, public baths, Notre Dame St. and Broadway, to Dansereau, Ltd., 1387 Bernard St., Montreal. $300,000. R. Larase, 1480 Blvd. St. Joseph, Montreal, archt.

(Proposal Advertisements see pp. 100 & 101)

OFFICIAL PROPOSAL

Bids: November 16, 1950 (171)

Excavation and Foundation Work of Filter Beds 15 to 18

CONTRACT 185

SEALED PROPOSALS addressed to the Board of Contract and Supply of The Metropolitan District and endorsed "CONTRACT 185—PROPOSAL FOR THE EXCAVATION AND FOUNDATION WORK OF FILTER BEDS 15 TO 18 AT THE FILTRATION PLANT IN THE TOWN OF WEST HARTFORD, CONNECTICUT", will be received at the Executive Offices of The Metropolitan District, 115 Broad Street, Hartford, Connecticut, until 2:15 P.M., Eastern Standard Time, Thursday, November 16, 1950, at which time and place they will be publicly opened and read.

The work to be done consists of the excavation and concrete fill for proposed Filter Beds 15 to 18 at the Filtration Plant, located in the western section of West Hartford.

The principal items include about 64,000 cubic yards of unclassified excavation and 2,900 cubic yards of concrete.

Plans and specifications may be obtained on and after November 2, 1950, at the Office of the Deputy Manager and Chief Engineer of The Water Bureau of The Metropolitan District, 2 American Row, Hartford, Connecticut, on deposit of five dollars ($5), in cash or certified or cashier's check, made payable to The Water Bureau of The Metropolitan District, which amount will be refunded if both are returned in good order within one month of date of opening of bids. No deposits will be refunded after that time. Specifications used in making a bid will be considered as returned.

Each proposal must be accompanied by a certified check for an amount covering not less than ten per cent. (10%) of the total amount bid, made payable to The Metropolitan District, and a satisfactory surety bond, as stated in the Information for Bidders, for the total amount bid will be required of the successful bidder for the faithful performance of the contract.

BOARD OF CONTRACT AND SUPPLY,
By: Richard Dillon, Clerk.
Hartford, Connecticut,
October 20, 1950.

Bids: November 27, 1950 (170)

Toll Booths, Canopy and Floodlights

THE PORT OF NEW YORK AUTHORITY
HOLLAND TUNNEL
NEW JERSEY PLAZA
CONTRACT HT-7

Sealed proposals for construction of toll booths and canopy and installation of floodlights at the New Jersey Plaza of the Holland Tunnel will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:00 P.M. Monday, November 27, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.
New York, November 9, 1950.

Bids: November 30, 1950 (164)

Intercepting Sewer

Sealed proposals will be received at the office of the Department of Service and Buildings of the City of Dayton, State of Ohio until 12:00 o'clock noon Eastern Standard Time, Thursday, November 30, 1950, for furnishing all materials and constructing Section IV of an Interceptor Sewer in the bed of the Great Miami River and through McCook Field from the intersection of the Great Miami and Mad Rivers to Triangle Park, and thereafter will be publicly opened and read.

The project consists primarily of approximately 5,000 feet of 60 inch pipe, or as an alternate, 5000 feet of "V" bottom box sewer 4'-9" x 4'-0" deep; 2400' of 42" pipe sewer; and miscellaneous smaller connecting sewers.

It is to be assumed that the total cost of the improvement will not exceed $432,353.00. Bids shall be accompanied by a certified check upon some solvent bank or a bond executed by a surety company authorized to do business in Ohio, or a bond of the United States or the City of Dayton for a sum equal to 5% of the amount of the bid submitted as a guarantee that if the bid is accepted a contract will be entered into and its performance properly secured. Plans, specifications and proposal forms may be obtained from the City Engineer, 500 Municipal Building, Dayton 2, Ohio, upon payment of $25.00 per set. Checks shall be made payable to the City of Dayton. Refund will be made for return of plans and Specifications. The City reserves the right to reject any or all bids or to accept the proposal which appears most advantageous.

George F. Baker
Director of Service and
Buildings
Municipal Building
Dayton 2, Ohio

U. S. Government

Department of Commerce, Bureau of Public Roads, October 20, 1950. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., NOVEMBER 28, 1950, for Project 1F2, Baltimore-Washington Parkway, Prince Georges and Anne Arundel Counties, Maryland. Reinforced Concrete Structure and Approaches. Length 0.109 mile. The approximate quantity of the more important items are as follows: 27,500 cu. yd. Excavation, 5,850 cu. yd. Cement Concrete, 900,000 lb. Reinforcing Steel, 88,100 lb. Structural Steel and 30,000 lin. ft. Untreated Timber Piling. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the address given above. H. J. Spelman, Division Engineer. (152)

(Continued on page 100)

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS
(Continued from page 99)

Bids: December 7, 1950 (156)

Sewerage System

TOWN OF FAIRFIELD
CONNECTICUT

Sealed Proposals for construction of a Sewerage System will be received by the Purchasing Authority and the Sewer Commission at the office of the Board of Selectmen, in the Town Hall, 611 Old Post Road, Fairfield, Connecticut, until 2:30 P.M. Eastern Standard Time on December 7, 1950, and then publicly opened and read. No proposal will be accepted after said hour. Proposals will be received on the following contracts:

Contract V —East Trunk Sewer, Section 1
Contract VI —East Trunk Sewer, Section 2
Contract VII —Turney Creek Sub-Trunk Sewer
Contract VIII—Branch and Lateral Sewers
Contract IX —Branch and Lateral Sewers
Contract X —West Trunk Sewer
Contract XI —Branch and Lateral Sewers
Contract XII —Branch and Lateral Sewers

Information for Bidders, Proposal forms, Specimen Contract, Plans and Specifications and copies or specimens of all pertinent documents may be examined at the offices of Bowe, Albertson & Associates, Engineers, 110 William Street, New York City, New York, and at the office of the Town Engineer, Silliman School, 608 Jennings Road, Fairfield, Connecticut, between the hours of 10 A.M. and 4 P.M. daily except Saturdays, Sundays and holidays, and obtained upon making a deposit of fifteen ($15.00) dollars, which will be refunded within thirty (30) days after the date when the proposals are opened, upon return of the aforementioned data, undamaged.

A bid bond for 10% of the amount bid must be submitted by the bidder with each bid as a guarantee that, in case a contract is awarded to him, he will execute such contract, and furnish a Performance and Labor and Material Bond in the full amount of the bid, satisfactory to the Sewer Commission as to form and sureties.

The Town of Fairfield reserves the right to reject all bids. Bids which are irregular in form, incomplete, conditional or qualified may be disregarded and rejected as improper except that the Purchasing Authority and the Sewer Commission may waive any defects or irregularities.

PURCHASING AUTHORITY
TOWN OF FAIRFIELD
By: Dimill L. Kinnie
First Selectman
SEWER COMMISSION
TOWN OF FAIRFIELD
By: Abner W. Mitchell
Chairman

BOWE, ALBERTSON & ASSOCIATES
Engineers

Bids: November 27, 1950 (168)

WATER MAIN EXTENSION SOUTH FALLSBURG WATER DISTRICT
TOWN OF FALLSBURGH, N. Y.

1. Sealed proposals for the installation of Water Mains and accessories in the South Fallsburg Water District, Town of Fallsburgh, N. Y. will be received by the Town Board at the Town Clerk's Office, South Fallsburg, until 2:00 o'clock, P.M., November 27, 1950, and there publicly opened and read immediately thereafter.
2. The work will consist of providing all labor, materials (except pipe) equipment and incidentals required for the construction of approximately 9600 feet of 8-inch diameter mains, including valves, hydrants and services.
3. Plans, specifications, bidding and contract documents may be examined at the Office of the Consulting Engineers, Alexander Potter Associates, 50 Church Street, New York 7, N. Y. and there obtained upon a deposit of FIFTEEN ($15.00) DOLLARS PER SET. Full refund of the deposit will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date of bids; refund for return of all other sets, in good condition, within the same period, will be Fifty Percent (50%) of the deposit.
4. All proposals must be on the form contained in the Specifications furnished by the Town.
5. All bids must be accompanied by a Certified Check or Acceptable Bidder's Bond in the amount of Ten (10) Percent of the amount of the Bid, made payable to the Town of Fallsburgh. Said checks will be returned to all, except the three (3) lowest bidders, not later than ten (10) days after opening of bids.
6. The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the contract and upon the payment of all persons supplying labor and furnishing materials on the construction of the work.
7. No bidder may withdraw his bid within thirty (30) days after closing date for receipt of bids.
8. The Town Board reserves the right to reject any or all bids and to waive any informality in the Bid.

TOWN OF FALLSBURGH, N. Y.
By: Mortimer Michaels
Town Supervisor.

Dated October 25, 1950.

Bids: November 20, 1950 (169)

Conveyor-Elevator Equipment

WASHINGTON SUBURBAN SANITARY COMMISSION

CONTRACT NO. 865-W

Sealed proposals for furnishing and delivering of conveyor-elevator equipment at the Willis School Filtration Plant, near Laurel, Prince Georges County, Maryland, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Monday, November 20, 1950 at 2:00 P. M., Eastern Standard Time, at which place and time they will be publicly opened and read.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

Bids: November 24, 1950 (172)

Alterations to Hangar 22 La Guardia Airport

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M 111

Sealed proposals for alterations to Hangar 22 at La Guardia Airport, Queens, New York, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M. November 24, 1950, at which time and place said proposals will be publicly opened and read.

Contract Document may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, November 9, 1950

U. S. Government

North Platte Project, Wyoming-Nebraska Design Section, Casper, Wyoming, October 20, 1950. United States Department of the Interior, Bureau of Reclamation. Notice is hereby given that sealed bids on Specifications No. 703C-160 will be received at the office of the Bureau of Reclamation, Torrington, Wyoming, until 2 p.m., Standard Time, November 21, 1950, and then publicly opened for furnishing labor and materials and performing all work for the rehabilitation of existing Lateral 98.1, station 17+13.5 to station 44+75.4, Fort Laramie Canal, North Platte Project, Wyoming-Nebraska.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming; and Charles H. Rader, Construction Engineer, Torrington, Wyoming. The specifications will consist of 2 volumes, "Special Provisions" and "Standard Specifications for Construction of Canal Standard Specifications or for copies of the Special Provisions furnished for bidding purposes; for others the charge will be $0.30 per copy for the Standard Specifications and $0.25 per copy for the Special Provisions, not returnable. (165)

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SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but Searchlight Section assumes no responsibility for errors or omissions.

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OFFICIAL PROPOSALS
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Bids: November 15, 1950 (151)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on November 15, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 333 Broadway, Albany, N. Y.				
Essex	FARC 50-58	Upper Jay-Keene, S. H. 5236	5.27	Asph. Concrete, Opt. Proj. No. F1034(1)	$44,000 Plans $15	$792,000
Greene	FASSH 50-12	Phoenicia-Stony Clove, Pt. 4 Proj. No. S937(3)	1.63	Bit. D. S. T. Gravel 42½' Span I-Beam 21' Span Conc. Slab	$10,000 Plans $15	$186,000
Saratoga	FAC 50-14 FARC 50-59	City of Mechanicville (So. City Line to Central Ave.) Mechanicville-Clifton Park, S. H. 1345 Proj. No. U319(2)	0.89	9" Cem. Conc. Pavt. 24', 48', Var. Wide.	$22,000 Plans $10	$405,000
Schenectady	FA STC 50-13	Schenectady City-Mohawk Thruway Connection (Broadway to Altamont Ave.) Proj. No. U323(9)	1.08	Found Course R. O. B. Gravel (Asph. Conc. Ty. 1A, Opt. = 0.47 Miles Temporary Pavement)	$82,000 Plans $10	$1,486,000
		DISTRICT No. 3				
		Wm. Robinson, Dist. Engr., 301 E. Water St., Syracuse, N. Y.				
Onondaga	FAOT 50-8	Ontario Thruway (Jordan-Warners) Proj. No. F.I. 1071(10)	7.08	Grading & Structures = 6.80 Miles Misc. Work = 0.28 Mile 25' Span Closed Box Bridge	$70,000 Plans $25	$1,290,000
Onondaga	FASS 50-10	High Bridge Road, Co. Rd. No. 4 Proj. No. S329(1)	3.46	9" Cem. Conc. Pavt. 24' Wide Reinf. Conc. Slab 30' Span 4 Span Alpha I-Beam 92.5' Each Alpha Royalty = $373.00	$45,000 Plans $15	$826,000
		DISTRICT No. 4				
		A. R. Mulligan, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.				
Ontario	FAC 50-13	Canandaigua City: Main Street FAC 49-7 Proj. No. U338(6)	1.42	Traffic Signal System	$500 Plans $10	$9,000
Wyoming	FAS SH 50-11	Perrysburg Cors.-Bennington, Pt. 1 Proj. No. S290(1)	3.99	D. S. T. Graded Gravel	$17,000 Plans $10	$300,000
		DISTRICT No. 9				
		F. W. Donovan, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Broome	FASH 50-13	Johnson City-Rt. 17 Connection Proj. No. U1092(1)	0.45	Substructure Susquehanna River Bridge Substructure Vestal Rd. Grade Sep. Substructure S. H. 1612 Grade Sep. Reinf. Conc. Box Br. 2 Spans 24.64' Tot. Misc. Work Incl. Access Drive of Asph. Conc. Ty. 1A, Opt. = 0.03 Mile	$42,000 Plans $15	$733,000
Chenango	FASSH 50-15	Bainbridge-Masonville, Pt. 1 Proj. S-273(1)	0.61	Asp. Conc. Ty. 1-A, Opt. = 0.13 Mile Grading = 0.22 Mile Intersecting Roads Asp. Conc. Ty. 1-A, Opt. = 0.26 Mile	$8,000 Plans $10	$140,000
		DISTRICT No. 10				
		J. J. Dancy, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Kings	FA BQE 50-4	Brooklyn-Queens Expressway, Contract 15 (Washington Plaza-Metropolitan Av.) Proj. No. U1066(12)	0.54	Grading, Paving, Structures & Misc. Work Including 2 Multiple Span Alpha I-Beam Viaducts Alpha Royalty $3,276.64	$130,000 Plans $50	$2,374,000
Nassau	FARC 50-60 FASH 50-14	Hillside Avenue, Pt. 1, S. H. 1948 Hillside Avenue, Pt. 2 Proj. No. U1002-1	1.18	9" Cem. Conc. Pavt. 48' Wide = 1.00 Mile Misc. Work = 0.18 Mile	$30,000 Plans $25	$580,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

F. D. TALLAMY
SUPT. OF PUBLIC WORKS

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., October 23, 1950. SEALED PROPOSALS will be received in Room 509, District Building, 14th and E Streets, N. W., Washington 4, D. C., until 2:00 p.m., EASTERN STANDARD TIME, November 30, 1950, and then publicly opened and read for GENERAL, INSTALLATION AND CONSTRUCTION BRYANT STREET PUMPING STATION, Bryant Street, between 2nd and 4th Streets, N. W., Washington, D. C. Proposal forms, specifications and drawings may be obtained in the Office of Chief Clerk, E. D., Room 427, District Building, upon the deposit of a certified check made payable to the Collector of Taxes, D. C., in the amount of Twenty-five Dollars ($25.00) for each set. (Telephone National 6000, Extension 2378) (155)

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3231) will be received by Bureau of Reclamation, Coulee Dam, Washington, November 30, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of miscellaneous architectural finishes for right and left control bay, Grand Coulee Power Plant, and elevator towers, Grand Coulee Dam, Coulee Dam Division, Columbia Basin Project, Washington. The work is situated at Grand Coulee Dam. Principal items are approximately: furnishing, installing, and repairing structural glass, travertine, linoleum, and rubber-type tile; plastering walls and ceilings; and other work. Time allowed for completion will be 180 days. For particulars, address Bureau of Reclamation, Coulee Dam, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(165)

OFFICIAL PROPOSALS

Bids: November 21, 1950 (167)

New Jersey Turnpike Authority

* * *

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 46

The work to be done under this Contract involves the construction of the substructure and superstructure of the Overpeck Creek Causeway, the construction of steel sheet piling cells and timber bulkheads on the side of the approach embankments, embankment construction, and other incidental work, all in connection with the construction of the New Jersey Turnpike in Bergen County.

Principal items of work include:

Fill	17,100 Cu. Yds.
Steel Sheet Piling*	4,500,000 Lbs.
Concrete	10,700 Cu. Yds.
Reinforcement Steel	865,000 Lbs.
Untreated Timber Piles	78,000 Lin. Ft.
Treated Timber Piles	3,300 Lin. Ft.
Creosoted Timber	54 M. B. M.
Metal Railing	625 Lin. Ft.
Stone Rip Rap	8,000 Tons

* Bidders are hereby advised that the Authority has placed an order, with the Bethlehem Steel Company, for supplying the steel sheet piling required for this project.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock, Eastern Standard Time on the morning of November 21, 1950, and thereafter in the Veteran's Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M., Eastern Standard Time, on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plant and equipment.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after November 1, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications, for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement and for the plan and equipment statement to be submitted with the proposal and of the special addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or the proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

October 30, 1950

U. S. Government

Dam, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(165)

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by November 3rd at the New York Office 330 W. 42 St., N. Y. 18, will appear in November 16th issue subject to space available

ENGINEERING

We anticipate increasing our engineering organization during the next several months for the design of Oil Refinery, Blast Furnace, Open Hearth, Steel Mill and Power Plants.

These men should be qualified as draftsmen, designers, checkers or higher engineering skills on design of piping, instrumentation, pressure vessels, structural steel, concrete, platework, heavy mechanical equipment and electrical.

If you are interested and have engineering design experience on this class of work, write to us for a personnel form for prompt consideration of your qualifications.

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CLEVELAND 1, OHIO

Structural Steel Detailers Wanted

Pay above average, vacation with pay, steady work, modern air-conditioned offices. Company est. 30 years. Send detailed information.

THE MARYLAND STEEL PRODUCTS CO.
P. O. BOX 1997
BALTIMORE 3, MARYLAND

Engineers Wanted

Civil—Electrical—Mechanical—Structural

Apply **KAISER ENGINEERS**
Division of Kaiser Industries, Inc.
1924 Broadway Oakland, California

Wanted
Structural Detailers & Checkers

Large modern structural steel fabricating plant has need of services of detailers and checkers for drafting room. Splendid working conditions. Must be experienced men and qualified to earn top salaries. Applications treated with confidence.

O'NEAL STEEL WORKS
Box 2623 Birmingham 2, Alabama

Wanted

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For large Civil Engineering Office on Gulf Coast

Specializing in Heavy Construction.

Permanent Work—Excellent Pay.

Please reply to

P-8033, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WATER WORKS SALES ENGINEER

Equipment manufacturer offers permanent sales engineering position in contacting water works and sewage consulting engineers, engineers in municipal departments and pipe companies. Work begins prior to writing of specifications and follows through to final bidding of jobs. Considerable traveling in central part of United States, probably working out of Chicago office. Fixed salary. Excellent opportunity for man over 35 with proper technical background, preferably with actual experience in selling equipment to water works. Submit qualifications, together with salary requirements to Personnel Manager.

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Bradford, Pa.

GENERAL CONSTRUCTION SUPERINTENDENT

By Midwest firm of engineers and contractors operating nationwide. Must be graduate engineer with not less than ten years experience in heavy industrial construction especially power plants, cement mills and processing plants. Give complete information.

P-8115, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED—SPECIFICATION WRITER

experienced in all phases of specification writing and preparation of contract documents, particularly for water and sewerage systems, sewage treatment plants and dams, by Pennsylvania firm. Give complete resume of training, experience, age, availability, salary expected and references in first letter.

P-8139, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS, DRAFTSMEN - ELECTRICAL - MECHANICAL - STRUCTURAL. JOB LOCATED IN MIDDLE WEST. EXCELLENT WORKING CONDITIONS. GOOD SALARY. OLD ESTABLISHED COMPANY.

P-8166, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL ENGINEER

Engineering and General Contracting firm with long successful record, requires a thoroughly trained and experienced designer familiar with all types of industrial construction. Pay will be consistent with experience, ability and willingness to accept responsibility. Location Milwaukee, Wis.

P-8163, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED, SEVERAL engineering graduates under 35, by large industrial fire prevention organization for field work involving periodic inspection and special consulting service. Electrical and Chemical engineers preferred. Permanent. Openings in United States and Canada. P-7287, Engineering News-Record.

WANTED: BRIDGE Designer; structural draftsman; experienced checker; highway engineer experienced in traffic interchange design. Give complete details including salary desired. P-7980, Engineering News-Record.

WANTED: EXPERIENCED Structural Designers in steel or reinforced concrete. Also, concrete detailers. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

CONSTRUCTION EXECUTIVE Thoroughly experienced with building construction of all types. Should be graduate engineer who knows plans thoroughly. Must be able to deal with Owners and Architects. One accustomed to handling large volume of correspondence, interviewing subcontractors, awarding subcontracts. Must have ability to organize and manage jobs from main office. The man we want should know every phase of the building construction business, both engineering and management. Write stating age, health, experience, salary, when available. Fleisher Engineering & Construction Co., 936 Ellicott Square Bldg., Buffalo, N. Y.

FIELD ENGINEER for Hydraulic Division of Electrical Department large Copper Company Chile, South America. Three-year contract, transportation both ways and salary while traveling paid by company. In reply give complete details. P-8075, Engineering News-Record.

WANTED IMMEDIATELY General Superintendent for multi-million dollar commercial project located in Midwest. Must be capable. Steady job for the right man. State age and experience, give references and enclose late photograph. Address Post Office Box 285, Columbus, Ohio.

SANITARY ENGINEER Wanted—Manufacturer of waste treatment equipment with national acceptance requires skilled sanitary engineer for sales promotion work. Sanitary engineering experience, intimate knowledge of treatment processes essential. Must travel. Submit full particulars. P-8113, Engineering News-Record.

(Continued on opposite page)

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College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

POSITIONS VACANT

(Continued from opposite page)

CONSTRUCTION COMPANY, operating State of Florida, Alabama, and Georgia, require A No. 1 thoroughly experienced job superintendent. Must be able to produce excellent references as to character and experience record in general building construction, reinforced con. etc. Excellent opportunity for an experienced applicant, who can meet our requirements. P-8091, Engineering News-Record.

WANTED: BRIDGE Designer, structural draftsman; small office. The Standard Engineering Corp., P. O. Box 1068, Albany, N. Y.

ENGINEER - EXPERIENCED in design of Sewers, Sewage Plants, Water Treatment Plants. P-8140, Engineering News-Record.

ASSISTANT OFFICE Engineer (Junior Electrical Engineer) for compilation of data, reports, equipment records and requisitions for purchase of material covering electrical equipment entire property of large Copper Company in Chile, South America. Single man preferred. 3-year contract. Transportation both ways and salary while traveling paid by Company. In reply give complete dtails. P-8148, Engineering News-Record.

CIVIL ENGINEER with field and office experience to write architectural and civil specifications for building projects. Secure position with large organization. Salary commensurate with ability. Sverdrup & Parcel, Inc., 1118 Syndicate Trust Bldg., St. Louis 1, Missouri.

WANTED—BUILDING Estimator with a structural engineering background. State training, experience and wage desires. Write P-8153, Engineering News-Record.

WANTED JUNIOR Engineering Graduate, two to four years experience, preferably irrigation or water supply. Starting salary $350.00 per month. Nevada Irrigation District, 144, South Auburn Street, Grass Valley, California.

SALES ENGINEER for cast iron pressure piping, preferably civil. Give resume of education, draft status, experience, salary expected, availability. All replies treated confidentially. P-8154, Engineering News-Record.

MECHANICAL ENGINEER. Large rubber company interested in young engineers for tire development work. Experience in tires not necessary but an advantage. Those with real ability and looking for an unusual opening will find this position attractive. State age and experience. P-8155, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

MAN WITH Construction experience to learn to estimate and sell ornamental iron, rolling steel doors, fire escapes, etc. with manufacturers agent, lower Michigan. SW-8085, Engineering News-Record.

POSITIONS WANTED

LOCATION-CONSTRUCTION Engineer. Railroads, Highways, Bridges and Building PE license. 45, single. Speak, read, write, Spanish. Preference South America. Now employed. PW-8095, Engineering News-Record.

ELECTRICAL SUPERINTENDENT 24 years experience in Distribution and Transmission Construction, available immediately. Best references. PW-8096, Engineering News-Record.

POSITIONS WANTED

PROFESSOR CIVIL Engineering; Assoc. M. ASCE; 40, Ph.D. Now occupying teaching position in leading university. Responsible academic and governmental engineering experience. Interested in post involving administrative and executive opportunities such as Department Headship. Excellent health. Minimum salary $7500. PW-8083, Engineering News-Record.

DRAFTSMAN STRUCTURAL, now employed, experienced in details, checking, design, concrete, timber plant layout, wants designing in Chicago, permanent. PW-8124, Engineering News-Record.

FOREMAN—18 years experience in construction work. Sewers, tunnels, foundations, dams, bridges, concrete grading, pile driving, sheeting. Can lay out work. PW-8130, Engineering News-Record.

CONSTRUCTION EXECUTIVE with twenty years experience as job engineers, superintendent, estimator and designer for heavy construction contractor, seeks new connection as employee or partner in company willing to grow. PW-8161, Engineering News-Record.

WANTED: BY construction superintendent, or general foreman with many years of experience, road building, of all types, construction of bridges, sewers, water lines and rip rap work. Just completing 1½ million dollar contract in New England. Available now for year round work. PW-8123, Engineering News-Record.

CIVIL ENGINEER. Registered P.E. Penna. B.S. degree Bucknell U. 1935, 15 years on heavy construction with U. S. Eng. Dept., Panama Canal, and private contractor. "Seabee" Construction Officer WW-2. Seeks position with consulting engineering firm or contractor. Available within 30 days. Anywhere in United States. PW-8155, Engineering News-Record.

PART TIME WORK WANTED

COMPLETE BOOKKEEPING. Accounting, payroll, tax service. Write-ups, audits, special assignments. New York Metropolitan area. PTWW-8045, Engineering News-Record.

CIVIL ENGINEER, licensed professional engineer, with wide experience in structural steel and reinforced concrete design, desires part time work. Preliminary design and estimates. Preparation of contract plans and specifications. PTWW-8160, Engineering News-Record.

SELLING OPPORTUNITY WANTED

MANUFACTURER'S REPRESENTATIVE wishes distributorship state of Colorado, building specialty or building products. B.S. in C.E. Seven years engineering. Eight years sales-representative. Correspondence invited. Best references. Write to E. G. W. 1611 West Cheyenne Road, Colorado Springs, Colorado.

PATENT ATTORNEY

Patent Practice
before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel, Registered Patent Attorneys, Suite 454, 815-15th Street, N. W., Washington 5, D. C.

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I can sell your product to Highway Departments and Paving Contractors. Twenty-five years high sales volume, wide acquaintance covering most parts of United States, also contacts in Canada, Mexico, and Overseas. Secure in present salaried employment but wish wider opportunity to demonstrate sales and management ability.
SA-8114, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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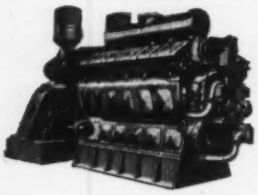

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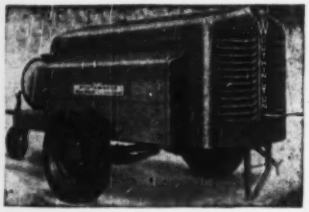

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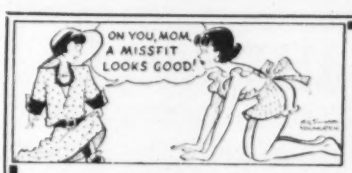

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1—15 ton Vulcan std. ga. locomotive, Ser. No. 3903. With special MCH couplings. Powered by 6 cyl. LeRoi Mdl. JM8 gasoline engine. Equipped with 4-wheel air operated brakes with 2 cyl. Westinghouse air compressor. Complete with starter and generator.
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1—7 ton Porter, 36" ga., gas power.

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1—Rex Mdl. 190 single #CP144, gas powered, with remixing hopper. Cap. 23 to 30 cu. yds. per hr. Max. vert. lift 110'.

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1—45' Crane Boom for Link Belt LS90.
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1—30 Ton Orton Diesel Loco. Crane.
1—30 Ton Browning Steam Loco. Crane, 1941.

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1—6" 2—4" 1—2" Humdinger self priming pumps on steel wheels.

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2—Plymouth 8 Ton Gas. Std. Ga. #4606 & 4611.
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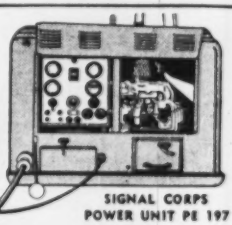

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Rebuilt Condition
$16,000
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A Large Amount Of Tublox Steel Scaffolding With All Necessary Clamps And Appurtenances Located In New England
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85 foot boom and leads—oil burner. Excellent Condition. *Immediately available.*
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Link Belt LS 21—New
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Shovel attachment
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Complete with one and three quarter yard bucket, a buy at $850.00.
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1938 AUTOCAR Cap. 1000 gals.
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Because of the Election Day Holiday, November 7th, the "Searchlight" pages of the

November 16th Issue of ENGINEERING NEWS-RECORD

Close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

FINAL CLOSING TIME
Display and Undisplayed Ads
Friday, November 3rd
PROPOSALS
Friday, November 10th

41-B Buc. Erie Steam Crane 20' bm. 60" boiler
Koehring Model 605 crane, drag line, wide crawlers Diesel
N'West Model 6 as drag or hoe wide crawlers Murphy Diesel
Browning Model K-2 crane gasoline, good buy
2 900 C. Ft. low pressure HR air comp. electric
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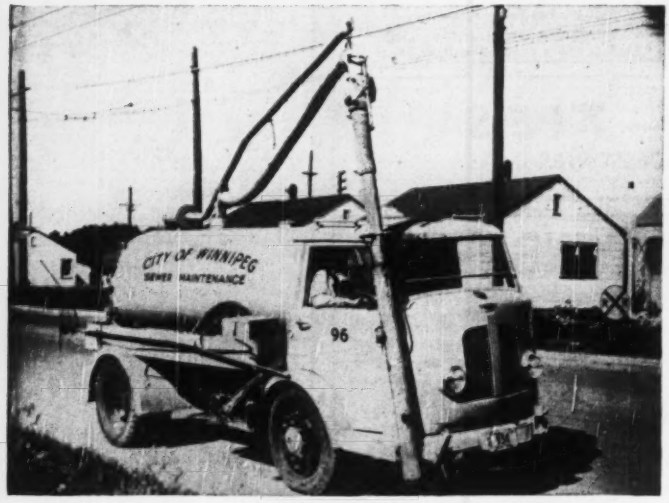
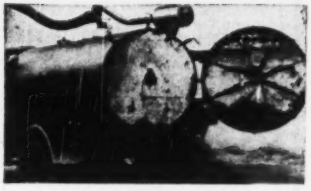
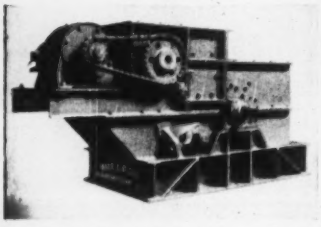
NEW PRODUCTS





Multiple-Purpose Catch-Basin Cleaner Uses Vacuum Process for Removing Grit and Muck

DESIGN OF SLUDGE TANK on the Karrier-Yorkshire catch-basin cleaner permits it to be completely filled with solid sludge. A special feature of the unit is the hydraulic ram used for compressing the sludge. (This is shown in the bottom, right illustration). This ram, in moving to the rear of the tank, forces water to the forward end, leaving a solid residue of grit and muck. When the rear door is opened, the ram can then be pushed further along to discharge the load without any dumping apparatus employed. The slow-running water-cooled pump has a valve to prevent passage from tank to pump of dirt or foreign matter. The 625-gal tank has dished division plates providing four compartments—one for compressed sludge, another for surplus water, one for clean water, and the fourth for cooling water. Built for use on narrow or traffic-congested streets, the unit can be equipped with attachments permiting its use as a street flusher or for emptying cesspools. One engine is used to operate both the vacuum pump and ram through two power takeoffs. The counterbalanced suction pipe swings through 360 deg. Dirty water drained by the ram can be returned to the sewer or used for flushing the next catch basin.—ROOTES MOTORS, INC., 2711 BRIDGE PLAZA N., LONG ISLAND CITY 1, N. Y.

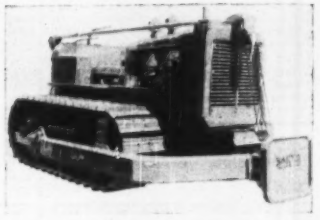


Improved Non-Clog Hammermills

Bulldog moving-breaker-plate hammermills have been redesigned and improved. These units are recommended for crushing sticky or high moisture materials. Features include accessibility of easily adjusted controls to produce variable-size finished products; and the use of heavier shafts equipped with anti-friction bearings. Special steels are used to provide for greater resistance to excessive wear and abrasion.—HAMMERMILL, INC., DIV. OF PETTIBONE MULLIKEN CORP., 4772 W. DIVISION ST., CHICAGO 51, ILL.

Truck-Mounted Portable Crane

Memco crane has an extended reach of up to 46 ft, depending on height of truck bed on which it is mounted. It revolves 360 deg, right or left, and automatically locks in place when rotation is stopped. It can be raised or lowered manually or electrically. Crane base occupies a 44-in.-square space. Boom extension lines are 5/16 in. and double 1/4-in. cable to insure maximum safety. Safe working strength of the load line is 2.6 tons.—DE-LUX NEON MFG. CO., 1007 N. W. 36TH ST., OKLAHOMA CITY, OKLA.



Pusher for HD-19 Tractors

Baker pusher weighs approximately 725 lb, is heavily reinforced, sturdily constructed, and designed to work with practically all types of scraper push plates. Built as matched equipment for the Allis-Chalmers HD-19 tractor, it is available as a complete unit or as an attachment.—THE BAKER MFG. CO., SPRINGFIELD, ILL.

Concrete Finishing Material

Speed Finish is designed for use in place of rubbing. It is said to develop

(Continued on page 115)

IT TAKES ONLY ONE *to install pipe*

but FIVE to repair it!

One of the most convincing demonstrations on the economy of using *durable* material is a repair job where low-first-cost material has failed—and is being replaced.

The original installation had been quickly made by pipe fitters. But the replacement calls for hours of work by as many as five crafts: pipe fitter, mason, plasterer, carpenter, painter. And this is only part of the cost story. The loss in production or utilization during the shut-down may amount to far more than the maintenance charge.

True, you pay a little more to *begin* with for Byers Wrought Iron pipe . . . but you pay a lot less to *end* with. In literally thousands of applications where corrosion costs you more than wrought iron, the use of this material is the soundest kind of economy move.

WHY WROUGHT IRON LASTS

This notch-fracture test specimen illustrates the unusual fibrous structure of wrought iron—which is responsible for the unusual corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

You will find a lot of helpful information on the control of excessive maintenance through the use of Byers Wrought Iron pipe in our technical bulletin, WROUGHT IRON FOR PIPING SYSTEMS. We will be glad to send you a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco, Export Division: New York, New York.

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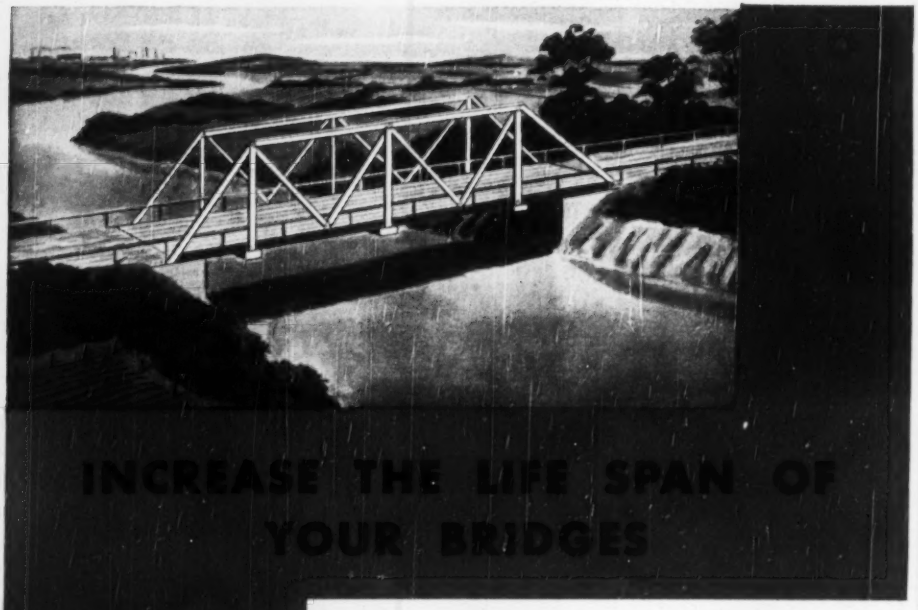
WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS



INCREASE THE LIFE SPAN OF YOUR BRIDGES

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chlorophenol

Wood lasts three to four times longer when treated with PENTA

Wood bridges and wood planking on steel bridges are constantly exposed to decay, and in many parts of the country, to insect attack as well. For protection against these two enemies of long and useful life, many bridge designers are specifying PENTAchlorophenol, *the modern wood preservative.*

PENTA protection offers many advantages. It gives long-lasting protection under even the most severe climatic conditions. PENTAchlorophenol is a chemical compound so it's always the same—gives uniform, lasting protection. PENTA-treated wood is clean, and easy to handle—workmen prefer the PENTA treatment.

For more complete technical information and assistance write to Dow, Dept. PE 38B.

THE CLEAN WOOD PRESERVATIVE!

How Wood Experts Regard PENTA

Leading utilities are specifying a PENTA treatment for poles in ever increasing numbers. Their own extensive research has proved to them that PENTA is a *better* wood preservative. Profit from their experience. The next time you need a wood preservative, specify PENTAchlorophenol.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

DOW
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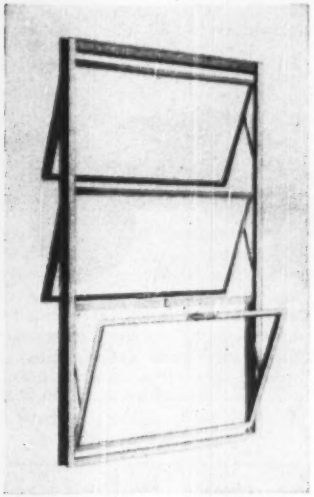
chlorophenol

a mechanical and chemical bond with the original concrete, and to improve the appearance and durability of the surface. It acts as a barrier against the elements, and does not destroy any properties of the concrete, the manufacturer states.—Irvington Form & Tank Corp., Dept. ENR-S, 20 Vesey St., New York 7, N. Y.



Aluminum Window

Aluminum window is available in awning, projected, and casement types. The Donovan-Universal windows feature Alcoa hollow extruded aluminum sash sections. Sash construction includes corner sections joined by a barbed right-angle wedge driven into the hollow sash members, then welded to assure rigidity. Multiple operating features of the awning and projected types provide simplified sash control. The lower vent automatically opens, closes, and locks all upper vents. All three types are manufactured in a wide range of sizes. Windows are delivered completely assembled, ready for glazing.—Universal Window Co., 950 Parker St., Berkeley, Calif.

Grooving Saw

Seven-inch groover saw when used with a 7-in. dado set can cut away a cross-section of 4 sq in. Built-in depth adjustment allows range of 0 to 2⅛-in. depth of groove. A regular combina-

(Continued on page 117)

LEVITT & Sons cut costs $16,800 a year with OZALID

OZALID is the speedy copying process that's 60 TIMES FASTER than costly, old-fashioned "copying"!

Ozalid, the versatile and economical copying process, not only helps Levitt & Sons create a distinctive style for each home in famous Levittown—but is saving these Long Island builders thousands of dollars each year.

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Although Levitt & Sons' 5,000 low-priced houses, built this year, were designed around 4 basic plans, each unit presents separate drafting problems. In spite of limiting basic designs Ozalid provides them with the simplest, most accurate way to add or change elements in the master plans.

Prints Delivered in Minutes

An Ozalid printing machine is located on the premises of the Levitt engineering department—there's no waiting for prints. Detailed information is forwarded immediately to the sales, legal, construction and purchasing departments; and new or corrected copies are immediately available. Working a 7-day week, Ozalid turns out *thousands* of prints—in record time.

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Prior to Ozalid, Levitt & Sons spent, on the average, $2,500 each month for prints alone. Since Ozalid, these costs have been reduced to $1,100—a saving of $16,800 a year!

Whether your business is large or small—engineering, accounting, manufacturing or selling—you can benefit from Ozalid's versatility. Get the full story of how Ozalid can solve *your copying problems*—write for your copy of "The Simplest Business System", today!

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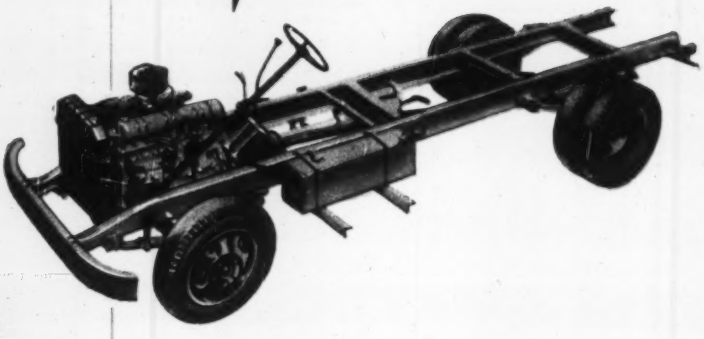

USE QUAKER STATE SUPERFINE LUBRICANTS

QUAKER STATE EXPP2 LUBRICANT is made from a unique 100% pure Pennsylvania base oil, combining extraordinary lubricating and wearing qualities. This satin-smooth pressure gun lubricant is the most outstanding chassis lubricant manufactured today.

To help give your equipment longer life and keep it rolling smoothly and safely, give it complete Quaker State Lubrication Service.

A COMPLETE LINE OF FINEST QUALITY LUBRICANTS

- Quaker State Super Quadrolube
- Quaker State Viscous Lubricant
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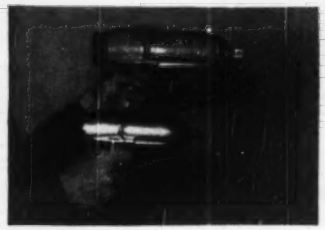
- Quaker State EXPP2 Lubricant
- Quaker State Universal Joint Lubricant
- Quaker State Waterproof Lubricant
- Quaker State Quadrolube

tion blade of 10-in. dia may be used for standard crosscut and rip sawing in lumber up to 3⅛ in. thick. The Model 117 features safety trigger switch, powerful universal motor, and die-cast aluminum-alloy housing.—SKILSAW, INC., 5033 ELSTON AVE., CHICAGO 30, ILL.



Air-Powered Nut Runner

New-model Impactools are available in two sizes—Size 504 for nut running up to ⅜-in. bolt size; and the 510 for nut running up to ¾-in. bolt size. The large reverse caps are deeply grooved for quick reversal. Built-in automatic lubrication assures continuous, trouble-free operation.—INGERSOLL-RAND CO., 11 BROADWAY, NEW YORK 4, N. Y.

New Product Briefs

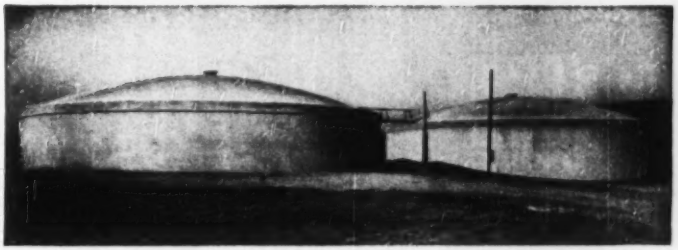
Plates for welding helmets and shields filter out ultra-violet and infra-red rays. G-S plates are available in 2 x 4¼ and 2 x 4¼-in. sizes. Produced by General Scientific Equipment Co., Philadelphia 2, Pa.

Fire extinguishers feature stainless steel shells and unremovable colored labels indicating the type of service for which they are best suited. Maker: American-LaFrance-Foamite Corp., Elmira, N. Y.

Liquid snow-plow wax has silicone added to provide a smoother, glass-like surface, and to increase lasting qualities of each application. Snow-Rem is produced by Speco, Inc., Cleveland, Ohio.

Mobile woodworking shop is trailer mounted to simplify its movement around a construction job. With various attachments, the Delta Multiplex is capable of performing over 125 different jobs. Made by: Delta Power Tool Div., Rockwell Mfg. Co., Milwaukee 1, Wis.

Tool boxes are available in styles to meet most requirements. They feature a 5-compartment cantilever tray that swings clear, leaving ample space to reach contents of box. Maker: Lyon Metal Products Inc., Aurora, Ill.



PRE-STRESSED "GUNITE" TANKS

Above are shown two 80' diameter 750,000 gallon pre-stressed "GUNITE" water storage tanks with "GUNITE" dome roofs. We built these tanks in 1943 for the Borough of Schuylkill Haven, Penna.

Pre-stressed "GUNITE" produces a water storage tank which is bottle tight and maintenance free. They may be built either at ground level, completely underground with earth covering over the dome roof, or may be in the form of stand-pipes or elevated tanks.

Our experience in this field includes scores of tanks and silos of many types ranging up to two and one-half million gallons capacity.

The use of "GUNITE" for repair and construction of reservoirs, bridges, buildings, etc., is illustrated and described in Bulletin A2400. We will gladly send a copy at your request. On your letterhead, please.

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MANUFACTURERS OF THE CEMENT GUN

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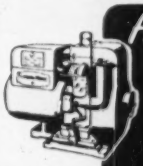

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Need power to make a success of a roadside restaurant, athletic field, parking lot, used car lot, motel, drive-in theater or any other enterprise in locations beyond the reach of highline service?

See your local Fairbanks-Morse dealer about installing a dependable generating set! He can supply generators in capacities from 600 to 35,000 watts—A.C., D.C., or A.C.-D.C. If you don't know the name of your nearest Fairbanks-Morse dealer, write today to Fairbanks, Morse & Co., Chicago 5, Ill.

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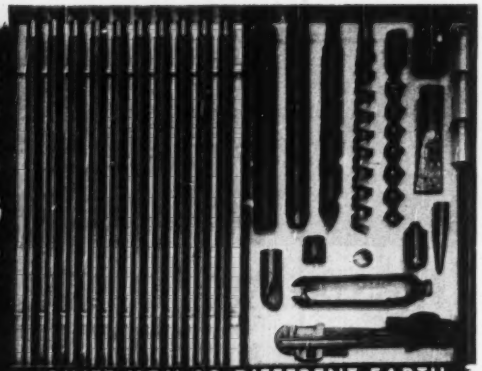

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We invite you to write us today for Bulletin 26-ENR. There are great savings when you use this 12-tool sampling kit, so don't delay. 1

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Fre-Molded *Para-Plastic*

CUTS COSTS . . . IMPROVES CONSTRUCTION

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Premolded Para - Plastic Sealing Strips are the answer to tough joint sealing problems when an absolutely watertight seal is required and a hot-poured compound can't be used.

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BASEAL for highway use

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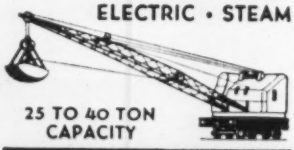
OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL
ELECTRIC • STEAM



25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO

Manufacturers' Publications

Wire Rope Accessories—Forged wire-rope and chain accessories are listed in this 40-p catalog (No. 145). Items listed include various types of links, shackles, swivels, hooks, thimbles, clips, sockets, turnbuckles, bolts, and miscellaneous fittings. Each item is illustrated. Tables provide information on dimensions, weights, capacities, and price.—The Thomas Laughlin Co., 143 Fore, Portland 6, Me.

Aerial Surveys—Complete service for producing surveys and maps from aerial photographs is described in this Abrams catalog. The catalog lists the advantages claimed for aerial surveys, shows the various types of maps produced, describes typical uses for aerial surveys, and illustrates Abrams equipment and personnel at work—Abrams Aerial Survey Corp., Lansing 1, Mich.

Portable Heating Equipment—Complete Aeroil catalog (No. 500Y) lists a line of oil-burning, gas-burning, and electrically heated portable equipment. Items listed include the Heet-Master asphalt kettle, cut-back and emulsion power-spraying units, flame guns, lead furnaces, concrete-curing machines, portable flame throwers, salamander and thawing-torch outfits, rivet-heating forges, and a complete line of rakes, hoes, spreaders, tampers, and similar equipment. Each piece of equipment is described and illustrated, and specifications are listed for each size in which each model is available.—Aeroil Products Co., Inc., Wesley St., South Hackensack, N. J.

Pump Catalog—The Sure-Prime line of contractors pumps is completely described in this interesting, well-prepared catalog. Fifty pages in length, it is sectionalized to simplify location of information on any particular type of pump. The Sure-Prime line includes dewatering, pressure, electric, and wellpoint pumps. Each of these is described in detail, and complete specifications are listed for each model. Job photographs are used to indicate typical applications. The catalog also contains a section of engineering data to assist in the determination of the correct pump, pipe, and nozzles for any particular job.—The Jaeger Machine Co., 550 W. Spring St., Columbus 16, Ohio.

Arc-Welding Studs—Standard and special studs with arc shields for stud-welding applications are listed in this

4-p folder. The folder contains a description of the principal features claimed for the KSM studs including economy, maximum stud strength developed, strong threads, minimum fillet diameter, precision fluxing of stud, and scientifically designed arc shields.—KSM Products, Inc., 6512 Park Ave., Merchantville 8, N. J.

Double-Impeller Impact Breaker—Recent addition to the Cedarapids line (the New Holland double-impeller impact breaker) is described in a new bulletin. This improved model rounds out the Cedarapids line of crushing equipment. The 8-p bulletin gives the "inside" story of the double-impeller impact breaker action, and describes how the breaker achieves high-capacity production of cubical-shaped aggregate with low power requirements. Construction features are illustrated and described in detail. Dimensions and specifications are included —Iowa Mfg. Co., Cedar Rapids, Iowa.

Heavy-Duty Truck Diesels—Two-color catalog describes the DA Dyna-Swirl diesel engines for all types of heavy-duty trucks. Included are detailed specifications of various features including a full explanation of the Dyna-Swirl controlled combustion system. Four pages are devoted to pictures and stories about installations of these engines.—The Buda Co., Harvey, Ill.

Tandem Rollers—Features of the KT7 3-to-5-ton roller are illustrated and described in a 4-p folder. This folder shows how the KT7 can be used as a conventional heavy-duty tandem, and how it is easily rigged for towing because of the rubber-tired road wheels carried on a bracket over the drive roll. Component parts described in detail are the engine, transmission, and final drive; the high-speed low-torque clutches; side air intake; hydraulic steering; and self-energizing scarifier. Complete specifications are listed.—The Buffalo-Springfield Roller Co., Springfield, Ohio.

Bulk-Cement Conveying—Handling of bulk cement by pneumatic conveying systems is illustrated in this 24-p catalog. The catalog lists typical jobs on which the Fuller equipment has been used, including unloading bulk cement from hopper-bottom cars and conveying it to mixing plants; unloading box cars and loading to storage bins; unloading trucks; conveying cement from storage areas; and on dam and other construction jobs. Component parts of the Fuller system are described in detail.—Fuller Co., Catasauqua, Pa.

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Building Security with Buildings

Faced with the fact that its one-industry economy is failing and unhealthy the City of Scranton, Pa., and the surrounding county are taking a unique way out:

The people are actually building themselves into a more stable economic position.

They are doing it with steel factory structures especially developed for the purpose—buildings that are being made available as locations for new business.

• **Where it started**—At the end of World War II, Scranton business men became painfully conscious that their city was becoming a blighted area. The days of prosperity for the dominant industry—anthracite coal mining—were on the wane. The once rich veins of hard coal in the district were petering out, strip mines were taking out much of the remaining reserves and pay checks were getting smaller. As veterans returned from the armed services in 1945 and 1946, relief rolls grew larger.

To rectify this situation, the Scranton Chamber of Commerce launched a determined effort to bring new industry into the area. Bonds were issued to local business and civic organizations as a means of raising funds to build plants. These plants were to be offered to industry at low rental, with a plentiful supply of labor as an added inducement.

• **More needed**—Progress was remarkable. Within five years, 16 new industries had moved in through the direct offices of the "Scranton Plan," and privately financed building brought another 16 enterprises into the area. Together these plants put more than 7,000 men to work.

But it wasn't enough. The rate of new employment wasn't keeping ahead of the unemployment tide.

The grim fact was that only 10,000 men were still working in the anthracite mines that once employed more than 40,000 and Scranton needed more new industry to employ another 20,000 men. That was nearly three times what the Scranton Plan was able to accomplish in five years.

• **Second try**—But the business men faced the problem and immediately came up with a new and larger program. This time they included the entire county in which Scranton is located. Naming their program the Lackawanna Industrial Fund Enterprises (LIFE), they set a goal of $10,000,000 in new industrial development for the area in the next five years—and 20,000 new jobs. LIFE built new plants and offered them at low rentals to attract new industries to the area.

Roy Stauffer, a Scranton automobile dealer who is the president of LIFE, puts the plan in one sentence:

"Under LIFE, we buy the house and they put in the furniture."

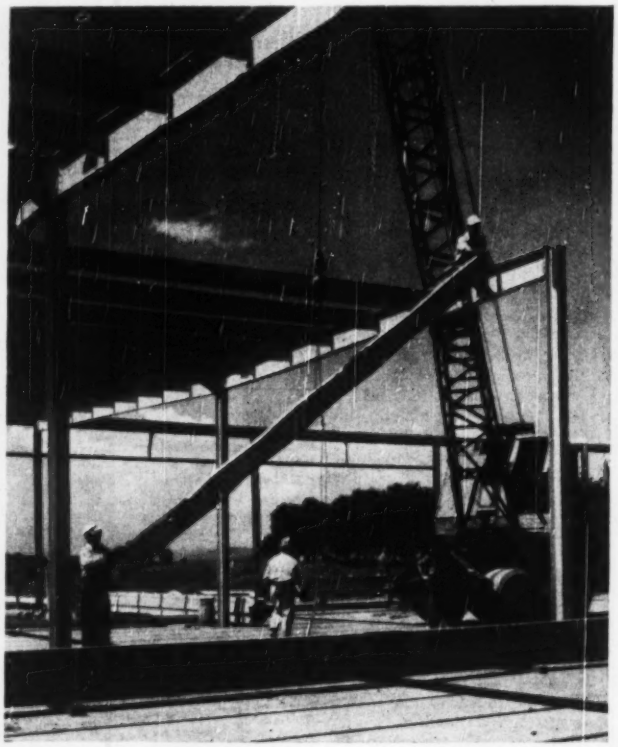
• **Here's the building**—Early in the program, the Anthracite Bridge Co. of Scranton worked out a building system that has been used in almost every new plant erected. The structures are designed for maximum utility at low cost. An example is the No. 1 building constructed under LIFE, completed in September.

Covering more than 89,000 sq ft of area, No. 1 building is 180x460 ft, height of 16 ft at eaves, 15 ft in the valleys of a zig-zag roof.

It has a steel frame composed of both wide-flange beams and junior beams. The floor is concrete reinforced with wire mesh. Walls are concrete block, and the office front is embellished with brick veneer. Roofs are made of 2x8-ft precast concrete slabs, 2 in. thick, lapped and covered with ¾-in. glass-fiber and topped with tar and slag.

The entire steel frame for the first building was erected in less than ten days by five men with a light truck crane and another five men acting as a bolting-up gang.

As in the case of other buildings under the program, No. 1 building was rented to industry at a rate per square foot that will pay for the building in 15 years. The tenant has an option to buy.



ENTIRE STEEL FRAMEWORK for the No. 1 building in LIFE'S program, was erected in less than 10 days. Five men with a light truck crane are shown here raising the structure. Another five-man bolting-up gang followed them.

"We don't dig footage, we dig miles!"

Yes . . . George McDonnell, operator, says that's what they do at Levittown Housing Development with the MICHIGAN ½ yd. Truck Excavator owned by Levitt & Sons, Inc.

"We move all over the field with it," states McDonnell, "and run back and forth to Roslyn, about thirteen miles in only an hour. The MICHIGAN is easy to operate, too — after all, you have air to do the work."

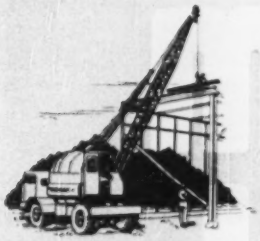
And when it comes to service, Construction Equipment Corp., Long Island City, MICHIGAN dealer, rates "tops" with McDonnell.

Martone Sewage Disposal Co., subcontractor at Levittown, has a MICHIGAN ⅜ yd. Truck Excavator. Mr. Martone states: "We can get it in and out of small places easily. It does a *lot* of work!" James Pepe, operator, volunteered: "I've run MICHIGANS for years. They're the easiest to operate."

These opinions of MICHIGAN Excavator-Cranes are typical from profit-wise contractors. When you need an excavator-crane . . . investigate *MICHIGAN* . . . you'll agree it's *your best buy*. Write, wire or phone for details.

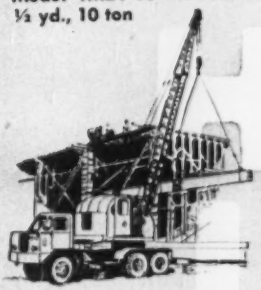
MICHIGAN POWER SHOVEL COMPANY

500 Second Street, Benton Harbor, Michigan, U. S. A.



Model T6K
¾ yd., 6 ton

Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton

Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

How TIMKEN® bearings helped make short work of a long runway

AIRLINERS didn't have to wait long to use the new runway at the Atlanta Municipal Airport. With Timken® bearings on earth moving equipment, Atlanta's new runway was completed faster, more efficiently, with less time out for maintenance.

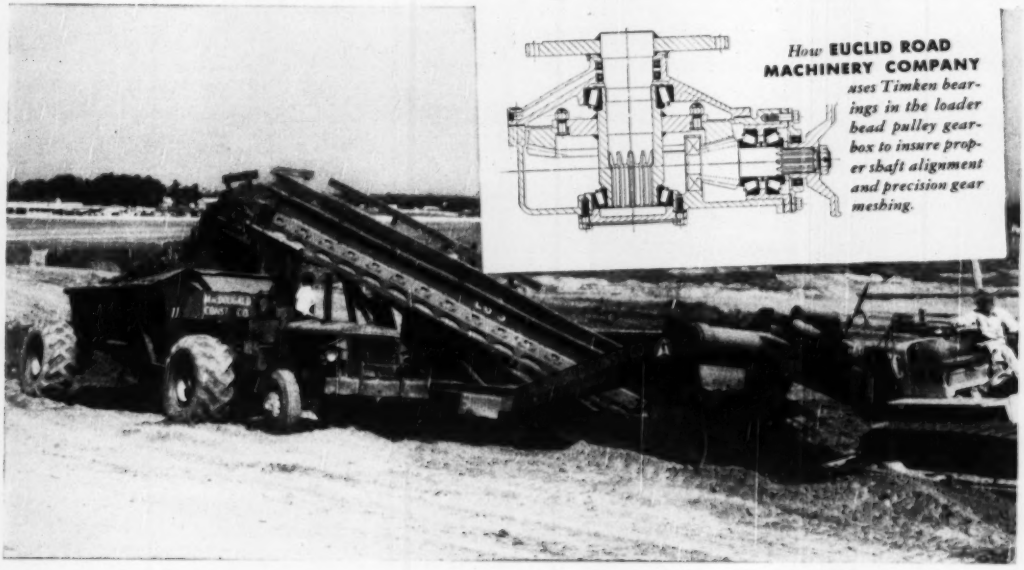
There are over 80 Timken bearings at critical points throughout this Euclid loader and hauling unit—64 in the Model BV Loader, 18 in the Model FDT Bottom Dump Euclid. As a result, wear on moving parts is reduced, delays due to breakdowns are minimized, and work on the job goes faster.

Timken bearings hold shafts in rigid, positive alignment, insuring a smooth flow of power. Because of their tapered construction, they can take radial and thrust loads in any combination. No special thrust bearings are necessary. Line contact between the rollers and races give them extra load-carrying capacity. Made of Timken fine alloy steel, Timken bearings are case-hardened to provide a hard, wear-resistant surface and a tough, shock-resisting inner-core.

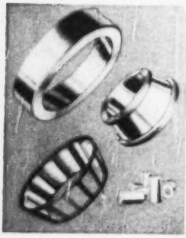
The true rolling motion and incredibly smooth surface finish of rollers and races enables Timken bearings to operate virtually friction-free. Tighter closures are possible; lubricant is retained—damaging dirt and moisture kept out. Under normal conditions, Timken bearings will last the life of the machine.

Backed by 50 years of bearing research and development, Timken bearings are No. 1 choice throughout industry. Since no other bearing can give you *all* the advantages of Timken tapered roller bearings, insist on Timken bearings in the machines you build—look for them in the equipment you buy. Make sure the trade-mark "Timken" is on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **EUCLID ROAD MACHINERY COMPANY** *uses Timken bearings in the loader head pulley gearbox to insure proper shaft alignment and precision gear meshing.*



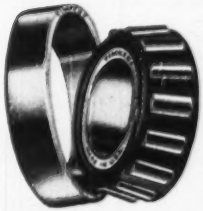
DESIGN LEADERSHIP

The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roll ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL — AND THRUST — LOADS OR ANY COMBINATION